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LA COMBE, A PALEOLITHIC CAVE IN THE DORDOGNE

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INTRODUCTION

DURING the summer of 1912, after having completed a tour of the paleolithic caves of France and Spain, I found myself in the picturesque little village of Les Eyzies with a desire to know more about troglodite culture and two or three weeks still at my disposal. I had always wanted to explore a Quaternary cave. Knowing this, Peyrony came to my rescue. Some five years previously he had made a sounding near the entrance to the small cave of La Combe (Dordogne) about one hour's walk to the south of Les Eyzies, and had found enough in the way of flint chips and bones to warrant further search. Moreover within the cave Peyrony, Peyrille, and young Casimir Mercier, son of the proprietor, had each found several specimens, including a bone point with cleft base, several perforated shells, and a polishing stone. The perforated shells and polishing stone later came into possession of Professor Max Verworn of Bonn, Germany; while I obtained through purchase from Peyrony and Mercier the bone point and a few flint implements.

I obtained a lease of the cave, and with two workmen, Marcelin Berniche and Casimir Mercier, began excavations on August 5th. Our route lay southward. We crossed the Beune and paralleled the narrow valley of La Gaubère to its source near the village of La Mouthe, that gave its name to the cavern in which Quaternary mural art was discovered by Rivière in 1893. From La Mouthe a

foot-path leads over a land elevation and down to the brink of a narrow valley, La Combe (meaning "little valley"), extending in a westerly direction and tributary to the Vezère, only a few kilometers distant. At this point the little valley is almost precipitous along its northern boundary. At the top of the escarpment and less than a hundred meters above the stream bed are a number of caves, one of which is called La Combe. It has a southwestern exposure and is on the property of François Mercier whose farmhouse is at the bottom of the valley trough.

Berniche accompanied me from Les Eyzies where he had arrived the same morning from Les Combarelles some two kilometers to the east of Les Eyzies. It was his father who sold the cavern of Les Combarelles to the French Government for a national monument after paleolithic engravings had been discovered on its walls. Berniche had to his credit a wide experience in cave exploration, having been employed in that capacity for more than twenty years. For the last four years he had worked for Dr Lalanne at the famous rock shelter of Laussel; he was in fact the lucky workman who uncovered the remarkable bas relief of the female holding a bison horn.

On our arrival at La Combe a few lusty calls brought Casimir Mercier with his tools and the key to the cave; for the entrance had been walled up and the cave used as a storehouse. We began excavations outside the present limits of the cave proper and in line with the sounding made by Peyrony, who had sunk a pit to a depth of 1.6 meters. This pit we sank an additional 60 c., finding flint flakes, very few of which had been retouched. The deposit is dark yellow to reddish loam. At a depth of 2.2 m. we struck a pure, stratified sterile layer of sand of brighter yellow than the loam. A smaller pit was sunk in the sand 1.2 m., and a bar of iron was driven an additional 40 c. without reaching rock bottom. The sand deposit is of Tertiary age. The original pit was more than 3 m. outside the shelter of the overhanging rock at the entrance to the cave. From this as a point of departure the deposits were removed section by section in the direction of the entrance. The stone wall (west of the door) and door that guarded the cave entrance

were finally removed so that the excavations might continue uninterrupted to and within the cave proper (pl. XII).

The cave has a depth of 7 m., a width of 5 m., and a maximum height above the floor accumulations of some 2 m. It is the distal remnant of a cave that originally had a depth of about 30 m. The roof exposed to the surface had fallen in ages ago. A ground-plan

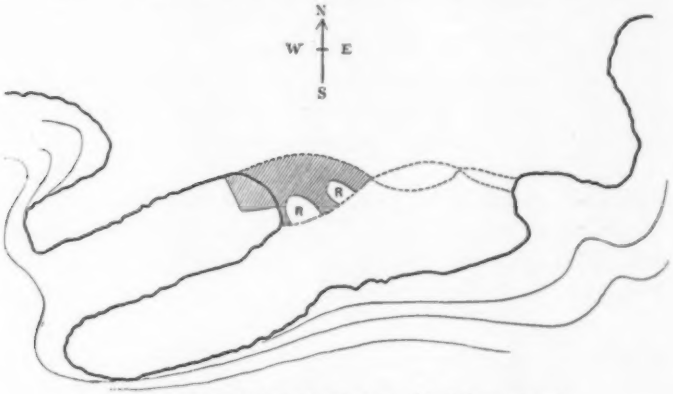


FIG. 9.—Ground-plan of La Combe. (*R*, *R*, large rocks.)

(fig. 9) will give at least a partial idea of the present and past history of the cave as well as its relation to the escarpment. The jambs of what was once the cave entrance are seen in the lower half of plate XII, which is a view looking across the valley of La Combe to the south.

The section just outside the entrance to the cavern revealed the following components, beginning at the top:

5. Surface soil	.2 m.
4. Yellow clay, Aurignacian industry	.5 m.
3. Yellow clay, Mousterian industry with *coups de poing* common	.6 m.
2. Reddish sandy clay, Archaic Mousterian industry with eolithic facies	.5 m.
1. Sands . . . Tertiary	

Both within the cave and outside the entrance *foyers* had been sunk by barbaric races. Not only because of the color but also on

account of the presence of potsherds and post-paleolithic kitchen refuse these black hearths were easily distinguishable from the yellow Aurignacian deposits into which they were sunk. In one or two cases they penetrated even into the Mousterian layer proper, thus bringing potsherds in close contact with *coups de poing*. Some hearths were superposed on other older hearths. The pottery dates from the first to the eleventh century A. D.

Archaic Mousterian

To begin with the oldest industry, we found in the layer of red sandy clay many non-utilized flint chips and bone fragments. The flints that could be called artifacts were somewhat rare in comparison. The patination was pronounced and the angles were often reduced by wear due to transport or use. If found in valley deposits these flints would easily pass for eoliths. The notched scraper or spoke-shave is the most common type (fig. 10). This old industry at La Combe resembles that in the lowest horizon at

Fig. 10.—Notched scrapers or spoke-shaves. Archaic Mousterian. ($\frac{1}{2}$)

La Micoque, but the specimens from La Micoque are not so worn. It resembles even more closely the lower layer in the classic station (upper terrace) of Le Moustier, the layer immediately below the level of the typical Mousterian points and side scrapers. At Le Moustier the worn condition of many of these archaic specimens is

likewise to be noted. Breuil reports a similar industry from the base of the floor accumulations of the small entrance (the one not at present used) at Font-de-Gaume. The eolithic type of cave industry was also found by Rutot in the cavern of Fond-de-Forêt, Belgium; and by Schmidt in the lowest culture-bearing layer at Sirgenstein, southern Germany.

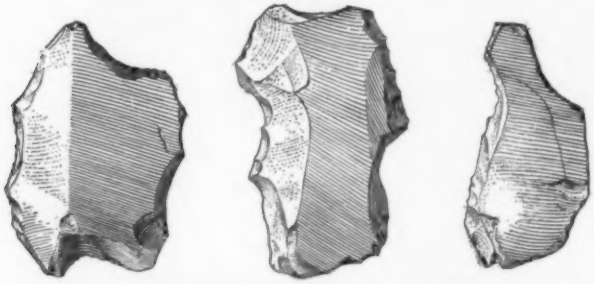


FIG. 11.—Utilized and retouched flint chips. Archaic Mousterian. ($\frac{1}{1}$)

The race that left the Archaic Mousterian industry was either lazy and careless or else incapable of producing anything but indifferent results in the way of chipping flint. The nodular crust shows on many of the specimens and a lack of method is manifest in the retouching or working of flint flakes (fig. 11). The result is that the chipping often shows on the bulb or inner surface of the flake instead of the outer surface or back, where one would expect to find it. In some specimens one margin is chipped from the bulb side and the other from the back. Certain nodules from which flakes have been detached resemble rude Chellean forms (figs. 12 and 13). These were found at the top of the Archaic Mousterian layer. One rude implement made from a quartzite pebble (fig. 14), the only one of its kind, was found near the base of the Archaic Mousterian deposit. The typical Mousterian side scraper and point as well as the *coup de poing* do not occur in the Archaic Mousterian layer (No. 2). In this lower layer were found curious points with thick squarish base (fig. 15). Here also was found a fragment of a large bone (*Bison* or *Bos*) that had seen extensive

service as a chopping block or compressor (fig. 16). Utilized bones of this class first came into general notice[1] through the researches of Dr Henri Martin in the Mousterian of La Quina (Charente),

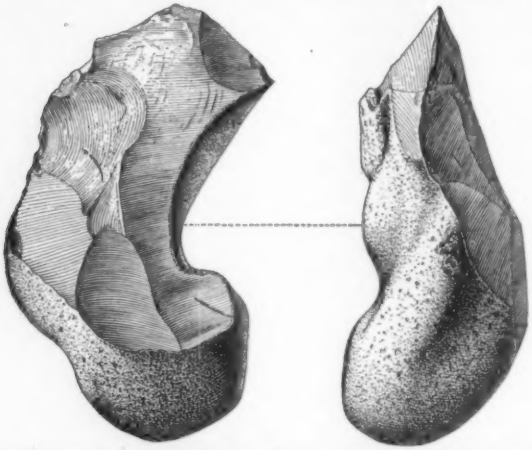


FIG. 12.—Flint core resembling a rude Chellean implement. Archaic Mousterian. (⅓)

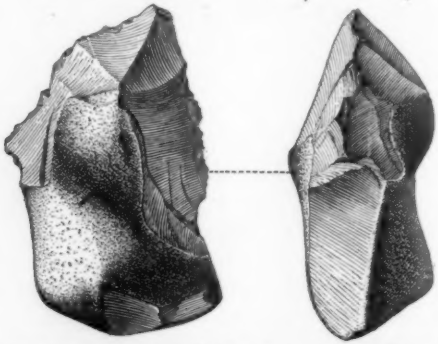


FIG. 13.—Flint implement of pre-Chellean type. Archaic Mousterian. (⅓)

where they are very abundant. They have also been found by Pittard at a station in the valley of Les Rebières (Dordogne), and

[1] Many years ago Dupont discovered utilized bones associated with Mousterian stone industry in the cave of Hastière, Belgium.

elsewhere by others. The bone compressors found by Martin and Pittard are however associated with upper Mousterian stone

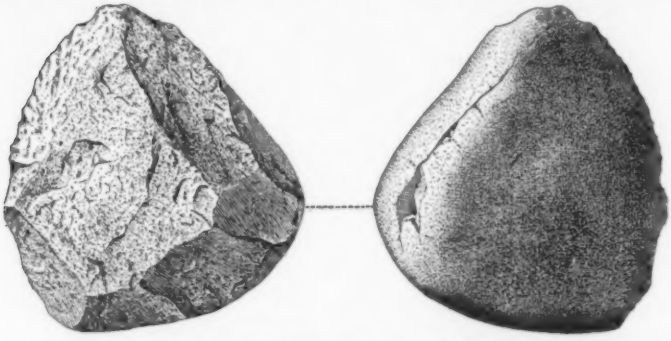
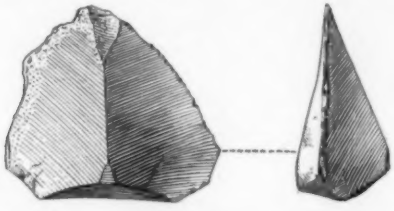


FIG. 14.—Rude quartzite implement. Archaic Mousterian. (½)



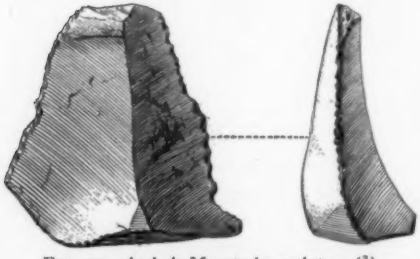


FIG. 15.—Archaic Mousterian points. (½)

industry characterized by the side scraper and the point. The specimen from La Combe came from the base of the Archaic Mousterian. After the termination of my work at La Combe I

visited Professor Commont at Amiens and learned that he had recently found similar bone compressors in the gravel pit of Boutmy-Muchembled at Montières, a suburb of Amiens. This pit is in the lowest or fourth (youngest) terrace. The utilized bone fragments were found in a whitish gravelly deposit below the recent loess and associated with Mousterian industry and a warm fauna. Commont believes the deposit to date from the Riss-Würm interglacial epoch. Montières and La Combe therefore would seem to prove that bone compressors were in use during the ancient archaic Mousterian phase.

Typical Mousterian

Immediately above the reddish sandy layer is a thick deposit of yellow clay, the lower half of which contains typical Mousterian industry and the upper half Aurignacian industry. There is no perceptible intervening sterile layer.

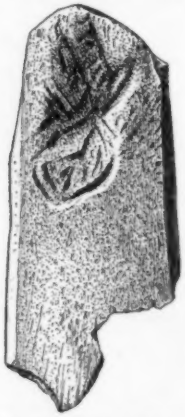


Fig. 16.—Bone compressor. Archaic Mousterian. (½)

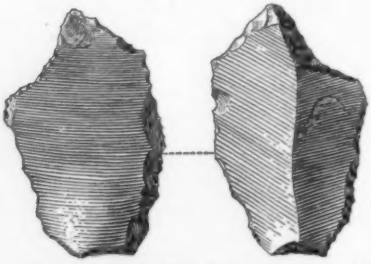


Fig. 17.—Archaic Mousterian form from the base of the typical Mousterian layer. (½)

Near the base of the Mousterian proper one still encounters scattering specimens of the archaic types common to the layer of reddish sandy clay beneath (figs. 17 and 18). At the middle and upper Mousterian levels are found the classic side scraper (*racloir*)

and point, as well as a relatively large number of *coups de poing*, usually rather small and of the Acheulian type; the largest of these has a maximum length of 12 c. and the smallest 4.8 c. The collec-

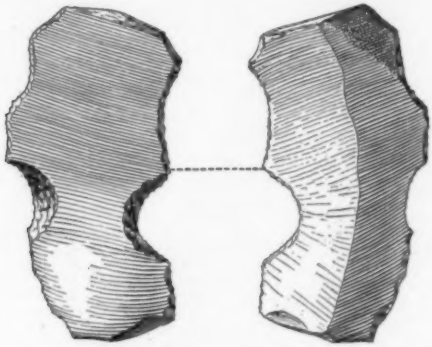


FIG. 18.—Archaic Mousterian type from the base of the typical Mousterian layer. ($\frac{3}{4}$)

tion from La Combe comprises some 30 *coups de poing*. This type of specimen is rare in the deposits of caves and rock shelters. In the great station of La Ferrassie (Dordogne), for example, the finding of a *coup de poing* is an event of unusual importance.

On the last day of our excavations and within a few minutes of closing time Berniche found one of the finest *coups de poing* that ever came from a paleolithic cave (fig. 19). It was found in situ at a depth of less than a meter from the surface. The specimen is intact; the flint is of excellent quality and from the heart of a nodule as indicated by the small bit of nodular surface (near the base), the plane of which is perpendicular to the plane of the length-and-breadth axis of the specimen. The work is done with a delicate sense of symmetry. The implement is more pointed than the typical *limande* of the valley deposits in northern France, resembling more in form and workmanship a late Acheulian implement found by O. Herman in 1906 at Miskolcz, Hungary. The Hungarian specimen is however considerably smaller than the one from La Combe. Within a few centimeters from the fine specimen we found

another *coup de poing*, larger and of much cruder workmanship. The flint of which it was made was likewise of poorer quality. In

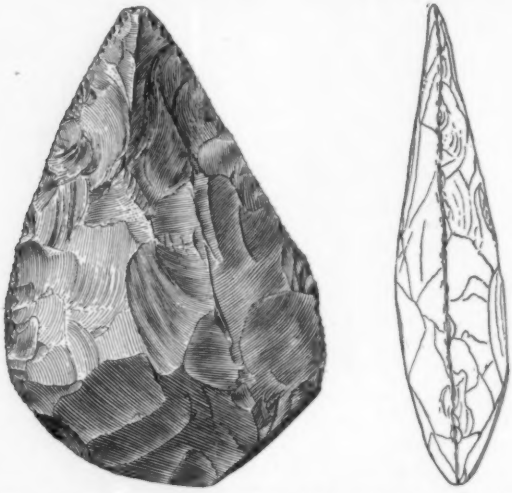


FIG. 19.—Coup de poing from the typical Mousterian layer. ($\frac{2}{3}$)

the Mousterian layer were found flint drills and hammerstones of which figures 20 and 21 are good examples. The hammerstone is a water-worn quartzite pebble and is abraded at several points.

In both the archaic and typical Mousterian horizons were found small, carefully selected, nearly spherical pebbles of which figure 22 in a good example. The presence of these so-called balls, or spheroids, of which some were at least artificially shaped in part, has been noted in numerous deposits of Mousterian (and even pre-Mousterian) age. One of the first to mention them was de Rochebrune as early as 1866. Chauvet illustrates examples from the Charente and elsewhere. Martin reports the finding of 76 calcareous spheroids at the Mousterian station of La Quina (Charente). At Les Robières I, a Mousterian station in the Dordogne, Pittard found a curious association of balls in groups of three. The balls thus grouped were nearly always of quartzite. He also found

calcareous spheroids, many of them pecked into shape. There are several theories regarding the use to which these stone balls were put. Were they gaming stones, or did they serve a more practical

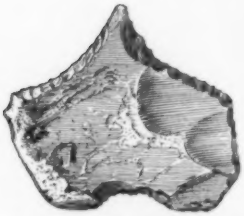


FIG. 20.—Flint drill. Typical Mousterian. (1/1)

FIG. 21.—Hammerstone of quartzite from typical Mousterian layer. (½)

purpose as sling-stones, or perhaps bolas similar to the weapon in use among the natives of the southern part of South America? Darwin describes two kinds of bolas. One consists of two round stones, covered with leather and united by a thong about eight feet long; the other kind has "three balls united by thongs to a common center." The finding by Pittard of these balls in groups of three favors the presumption that bolas of the triple-ball type were used by the Mousterians of western Europe. The bolas had been lost or laid aside intact, but the skin covering and uniting thongs have long since decayed, leaving the three balls in a tell-tale position.

FIG. 22.—Selected pebble from the typical Mousterian layer. (½)

Aurignacian

As has been said, there was no sterile layer separating the Mousterian horizon from the Aurignacian. The latter was the

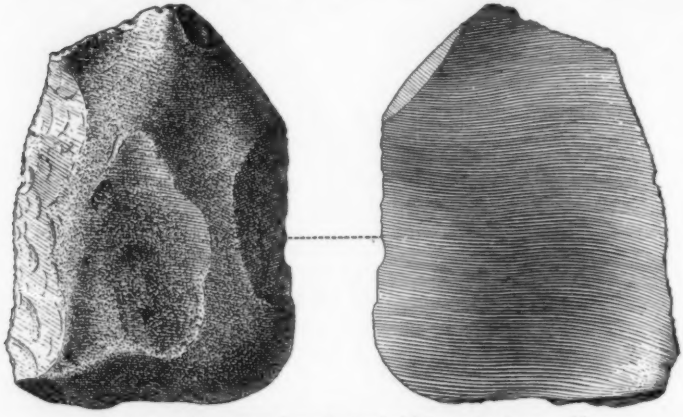


Fig. 23.—Side scraper from the typical Mousterian layer. ($\frac{2}{3}$)

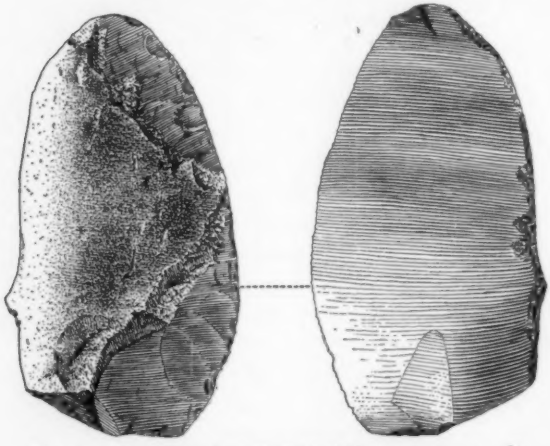


Fig. 24.—Side scraper from the typical Mousterian layer. ($\frac{2}{3}$)

last paleolithic occupancy of the cave. There seem to be no types representing the earliest and latest phases of Aurignacian culture.

The oldest distinct lithic type is the Châtelperron blade (fig. 25), which first made its appearance near the summit of the lower Aurignacian. On the whole the industry is typical or middle Aurignacian. The combination graver-perforator reproduced in figure 26 seems

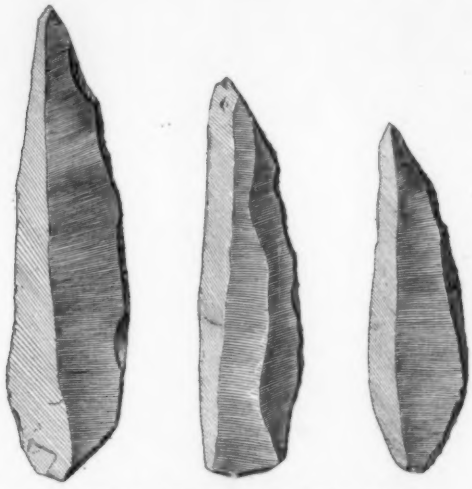


FIG. 25.—Châtelperron blades from the Aurignacian layer. (1/1)

to be of an early type; but those represented in figure 27 are not earlier than the middle Aurignacian, and the lateral graver with notch (fig. 28) is even suggestive of the upper Aurignacian. Many splinter-like chips produced in the manufacture of gravers were found in the Aurignacian deposit. Implements of the type shown in figure 29 were rather common. One end of the blade-like flake is chipped to a point; while the other is rounded by chipping to form an end scraper. The lateral margins are retouched. The working shows only on the outside of the flake.

A remarkably fine flint blade (fig. 30) was found in a gently oblique position. It measures 15.2 c. in length and is made of a yellowish flint similar to the well-known "beeswax" flint of Pressigny-le-Grand (Indre-et-Loire). The base is square. The right

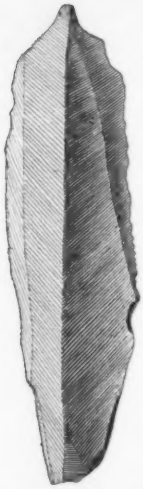


FIG. 26.—Combination graver-perforator. Aurignacian epoch. (1/1)

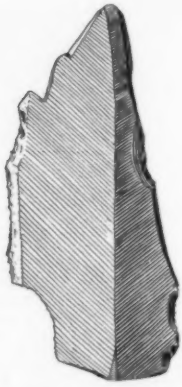


FIG. 27.—Flint gravers. Aurignacian epoch. (1/1)

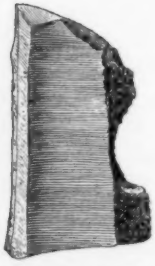


FIG. 28.—Combination graver and spoke-shave. Aurignacian epoch. (1/1)

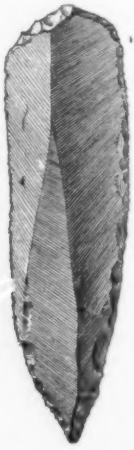


FIG. 29.—End scrapers. Aurignacian epoch. (1/1)

margin is retouched for its entire length, as is also the left margin for more than 2 c., thus giving to the blade a distinct point. The left margin is likewise retouched for a space of 4 c. beginning at

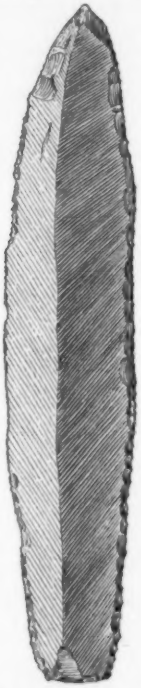


FIG. 30.—Long pointed flint blade. Aurignacian epoch. ($\frac{1}{4}$)

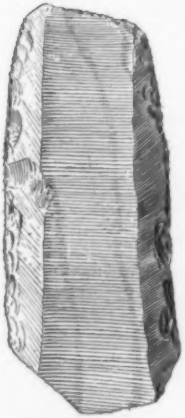


FIG. 31.—Flint knives. Aurignacian epoch. ($\frac{1}{4}$)

the base. The only secondary working to be seen on the inner or nuclear face of the blade is on the left margin from 3 to 6 c. below the point.

Flint knives similar to the larger one in figure 31 were common. Carinate scrapers (fig. 32) were comparatively rare.

A number of crude hammerstones were found in the Aurignacian deposit. The quartz pebble reproduced in figure 33 is a good

example. Slight abrasions centrally located on each side seem to indicate that this specimen might have served also as an anvil stone. A flat elongate pebble from a fine-grained crystalline igneous rock is one of the smallest anvil stones (fig. 34) found at La Combe.

In comparison with the primitive Mousterians the Aurignacians were men of new ideas, practical as well as esthetic. In the early

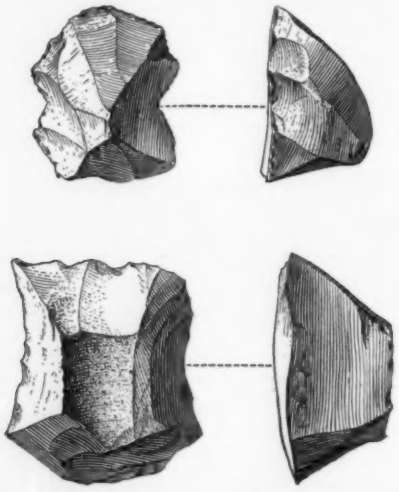


FIG. 32.—Carinate scrapers. Aurignacian epoch. (½)

days of the science it was customary to speak of the two grand divisions of the Stone Age as the period of chipped stone implements and the period of polished stone implements. Later the terms paleolithic and neolithic came into general use, and fortunately so, since the terms formerly employed had become misnomers for two reasons. In the first place perhaps more than half of the neolithic stone implements were never polished; and secondly stone objects of undoubted paleolithic age bearing marks of the polishing process have been reported from various stations, including Les Eyzies, Laussel, La Ferrassie, and La Combe, to mention only the Dordogne.

The art of polishing bone in paleolithic times is a phenomenon of common occurrence and need not enter into the discussion here. For some reason not easily explained it never occurred to any of the paleolithic races to polish flint implements. In fact the polishing process in paleolithic times, so far as stone is concerned, seems to have been wholly incidental and not a means to an end. The

FIG. 33.—Hammerstone of quartz. Aurignacian epoch. (½)

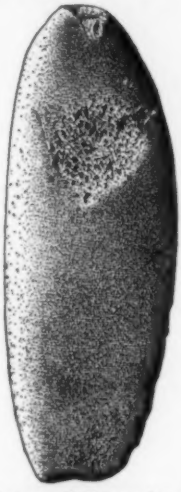


FIG. 34.—Pebble used as an anvil stone. Aurignacian epoch. (½)

abrasions on a primitive hammerstone and anvil stone are the results of their use as such and not of their manufacture. This is likewise true of the polished facets on the upper and nether rubbing- or grind-stone; and the constant polishing of bone needles would finally leave grooves in the stone on which the work was done.

A fine example of the rubbing stone (fig. 35) was found in situ within the cave on the western side and at a depth of 50 c. from the surface of the cave deposit. It is a weathered, slightly flattened oval water-worn pebble from a rock of igneous origin. The opposite sides are much reduced by polishing; the pebble had been extensively employed evidently as the upper or active rubbing

stone. In the center of each polished surface are two groups of scars. The pebble had therefore been used as an anvil stone or a

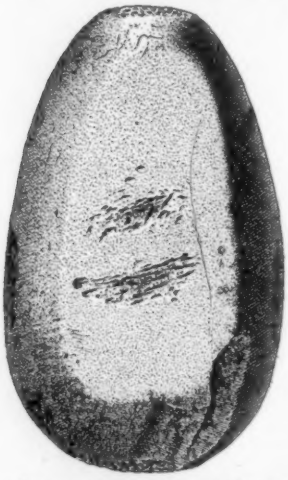


FIG. 35.—Combination rubbing stone, hammerstone, and anvil or chopping block. Aurignacian epoch. (½)

FIG. 36.—Granite pebble that had served as a rubbing stone. Aurignacian epoch. (½)

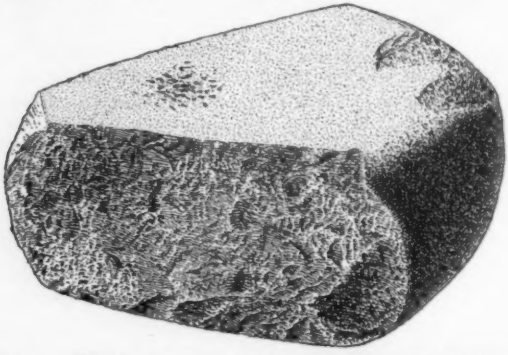


FIG. 37.—Combination passive rubbing stone and chopping block. Aurignacian epoch. (½)

chopping block. The battered ends and the bruised condition of one of the margins prove that the pebble had likewise functioned

as a hammerstone. The relation of the contused to the polished surfaces establishes the fact that the implement had last served as a rubbing stone. A few weathered granite pebbles that had been employed as active rubbing stones were found. One of these is reproduced in figure 36. In figure 37 is represented a fragment of what must have been a rather large nether or passive rubbing stone. It has a thickness of 6 c. Both sides bear evidence of extensive wear. The piece was likewise employed as an anvil stone. It is a compact fine-grained granitoid rock.

That paleolithic man was quick to seize upon objects in nature that bore a resemblance to some cherished or familiar form is at-

FIG. 38.—Perforated effigy stone resembling a bird's head. From the Aurignacian layer. (½)

tested by numerous examples dating from various epochs. There are in the first place the flints which fortuitously or otherwise resemble animal forms familiar to man. Examples may be found

in almost any ancient gravel bed. They might well have attracted the attention of early man. Whether they did or did not is a question that has not yet been definitely answered. Whether a freak of nature may also be classed as a fetich depends entirely on human association. If found in a place of human habitation, and especially if nature's work has been supplemented in some unmistakable way, all reasonable doubt is removed. For example, Peyrony found, in the Aurignacian layer at La Ferrassie, a flint

FIG. 39.—Bone point with cleft base. Aurignacian epoch. (⅔)

FIG. 40.—Bone polishers. Aurignacian epoch. (⅔)

nodule bearing a marked resemblance to a human cranium with the two orbits, nasal bridges between, etc. In addition some of the asperities had been artificially removed, thus enhancing the likeness. Examples might be cited dating from times long subsequent to the paleolithic. For example, Flinders Petrie found in a

prehistoric temple at Abydos ape figures in terra-cotta and ivory; also pieces of stone rudely blocked out to suggest baboons. With them was a single unworked flint nodule of suitable size and shape, which "seems to have been kept for its likeness to a baboon." In the Aurignacian layer at La Combe we found a calcareous rock roughly shaped like the head of a bird with short beak (fig. 38). The eye is represented by a perforation presumably natural and apparently rendered somewhat more shapely by artificial means. This piece would have made an excellent hammerstone, but it was evidently preserved for less prosaic uses. The original crust of the rock is everywhere intact except for a slight chip removed from the base of the neck.

FIG. 41.—Piece of worked ivory. Aurignacian epoch. (½)

FIG. 42.—Perforated toe-bone of the reindeer. Aurignacian epoch. (½)

Implements of bone and horn were rare, there being but a single point with cleft base, typical of the beginning of the middle Aurignacian (fig. 39). Three bone polishers are shown in figure 40. The largest was evidently made from the rib of some large animal. Only one piece of ivory was encountered, an implement cut from near the center of the tusk (fig. 41).

Among various phalanges of the reindeer one first phalanx of

the inner functional digit (III) of the right foot has a squarish and what seems to be an artificial perforation near the proximal end (fig. 42).

The Aurignacians are known to have been a race of surprisingly artistic ability. And they accomplished what they did without a background of art inheritance; for their predecessors, the archaic Mousterians, left nothing that might be called art in the strict sense—only utilitarian artifacts. Any efforts they might have made along artistic lines were of a perishable nature and have completely disappeared. The presence of bits of ochre and oxide of manganese in deposits of Mousterian age at numerous stations suggests the practice of painting or tattooing the body; at all events the use of red and black coloring matter for purposes ceremonial, magical, ornamental, or otherwise; for many of the pieces were genuine crayons with worn facets. Peyrony reports the finding of mineral colors not only in the Mousterian layers at La Ferrassie, Pech de l'Aze, Tabaterie, and Combe-Capelle, but also in practically every Mousterian deposit excavated by him. It is possible therefore that the fine arts had their birth in man's love of color (as well as of form) and that the old Neanderthal race made at least a beginning in that field. Certain it is that the love of ornament is at least as old as, if not older than, the fine arts.

At La Combe several fragments of ocher were found, especially in the Aurignacian level. The Aurignacians were in fact the first to leave a permanent record in the fields of sculpture, bas relief, engraving, and painting. It is a pity their robes and shields of bison skin could not have survived; for both offered fitting surfaces for embellishment. No art objects, either portable or mural, were found at La Combe, but various ornaments were encountered. The canine of a stag with the root worked down on both sides and perforated, and with three tally marks on the side of the crown, is reproduced in figure 43.

A large incisor of the stag is grooved near the end of the root (fig. 44). The dentine has been cut away in such manner as to leave a distinct shoulder in the direction of the root end only. In the end of the root there is the beginning of a conical perforation.

Perforated animal teeth were quite extensively employed as a means of ornament during the upper paleolithic period. So far as I have been able to ascertain, no perforated human teeth have hitherto been reported from a European paleolithic cave. My surprise and satisfaction were both great, therefore, on finding one such tooth at La Combe. It is a large lower left first or second

FIG. 43.—Perforated canine tooth of the stag bearing tally marks. Aurignacian epoch. (1/1)

FIG. 44.—Grooved incisor of the stag. Aurignacian epoch. (1/1)

FIG. 45.—Perforated human lower molar tooth. Aurignacian epoch. (1/1)

molar with unusually large and spreading roots (fig. 45). On the front face of the anterior root is a conical hole that passes entirely through the root. The posterior root being in the way, no attempt was made to bore from the other side. It should be remembered that perforated teeth almost without exception have but a single root. Above and leading to the hole are a number of distinct incisions, and below the hole is a short gutter leading to the tip of of the root. The tooth has been submitted to a number of experts (A. Hrdlička, J. W. Gidley, G. S. Miller, G. A. Dorsey, F. A. Lucas, W. D. Matthew, and Roy Andrews), all of whom agree that it is human. Dr F. C. Baldwin of New Haven, a dentist, is of the same opinion. He has extracted molar teeth as large as the one from La Combe and with roots perhaps equally spreading.

While the use of human teeth as ornaments seems to have been very rare indeed among the paleolithic cave-dwellers of Europe, the practice was more common in the New World, especially in South America. Many human teeth with perforated or worked

roots, evidently once serving as ornaments, were found at Sacsahuaman, Peru, in 1912, by the expedition in charge of Professor Hiram Bingham of Yale University.

Parts of the human skeleton are known to have been adapted as objects of adornment or utility both in the Old World and the New. At the cave of Le Placard (Charente), M. de Maret found several cranial calottes that had been so fashioned as to serve as drinking cups. They are of Solutrean and Magdalenian age; some of them were recently published by Breuil and Obermaier. Small bone disks cut from the walls of the human cranium, some of them perforated for suspension, have been found in French stations dating from the neolithic period.

In the Edwin Harness Mound of Ohio, Mr W. C. Mills gathered interesting data bearing on the use of the human jaw, both upper and lower, as an ornament. Examples of the lower jaw are more frequent than of the upper. A mandible with a perfect set of teeth was selected, the ascending rami broken away and a hole bored on each side of the symphysis. In one instance where three incisor teeth were missing, they had been replaced by incisors of the deer. The long roots of the deer incisors were cut off so that the teeth might fit properly in the human sockets. The ascending rami of this particular specimen were left intact save for notches cut near the neck, indicating that the jaw was suspended from this point. The coronoid process is also slightly worked, "and parts of the body of the jaw show polishing and cutting." The superior maxillary was converted into ornaments by cutting away the bone from the face well above the alveoles and leaving the palate intact. The posterior palatine canals served as perforations for the suspension of the jaw; these had been enlarged by boring.

There was something in the white smooth enamel of teeth, both human and animal, that appealed to the primitive esthetic sense. It was no easy matter to make the perforations preliminary to the stringing or otherwise suspending. The teeth in situ reproduced in a measure the desired effect and removed the necessity of making the perforations. Hence the use of the jaw with its already strung teeth. The jaws of other animals, such as the mountain lion, black

bear, and wildcat, were used in the same manner. Since primitive races are not well versed in comparative anatomy, it is probable that parts of the human anatomy were employed sometimes unwittingly. The replacing of human incisors by deer incisors would seem to favor such a view.

At the Roebuck site, eight miles from Prescott, Ontario, Mr Harlan I. Smith recently found both tools and ornaments made of human bone. The proximal half of a human ulna, for example, was converted into a bone punch. Several circular disks, some four inches in diameter and cut from the human cranium, were each perforated in several places evidently in part at least for purposes of suspension. The site is thought by Smith to be Iroquoian.

Among the most notable examples of appropriating human bones for decorative purposes were reported by Putnam and Willoughby from the Hopewell and Turner mounds in Ohio. The incised pattern on pieces of the human femur from the Hopewell mound and on an ulna from the Turner mound are elaborate and evidently of special symbolic as well as decorative import.

The perforated teeth, including one human molar to which reference has already been made, prove that the art-loving Aurignacians were likewise fond of ornament. Pendants of bone and ivory, as well as perforated shells, were objects of personal adornment. So far as shells are concerned, both bivalves and univalves were employed, the latter however predominating. The cave men used not only shells of existing species, but also fossil shells from the Miocene Faluns of Touraine. At La Combe we found only one perforated shell of a bivalve, that of *Arca* (fig. 46). Of univalves we discovered more than a score. Some of these are in a fragmentary condition, so that it is not possible to say whether they had been perforated or not. They include *Littorina littoria* (fig. 47), *L. obtusata* (fig. 48), *Purpura lapillus* (fig. 49), *Turritella* sp. (fig. 50), *Nassa*, and *Natica*; all are marine forms evidently brought from the Atlantic ocean more than 160 kilometers to the westward. Ac-

FIG. 46.—Perforated shell of *Arca*. Aurignacian epoch. (1/1)

cording to Professor A. E. Verrill they resemble the forms still living in English waters of the North Sea.[1] The perforations are

FIG. 47.—Perforated shells of *Littorina littoria*. Aurignacian epoch. (1/1)

FIG. 48.—Perforated shells of *Littorina obtusa*. Aurignacian epoch. (1/1)

usually round, some however are in the shape of slits made evidently by sawing back and forth (fig. 48).

Some of the graves in the caves of Mentone are marked by a prodigality in the use of shell ornament. The skeleton found by Rivière in the cave of Cavillon was accompanied by perforated shells to a number exceeding 200 on the skull and 41 about the

FIG. 49.—Perforated shells of *Purpura lapillus*. Aurignacian epoch. (1/1)

FIG. 50.—Perforated shell of *Turritella* sp. Aurignacian epoch. (1/1)

leg-bones just below the knee. Immediately over the skeleton of a child discovered by Rivière in the *Grotte des Enfants* were more than a thousand shells of *Nassa neritea* that had evidently been attached to a belt. The adornment of the men was even richer than that of the women, as noted by Verneau in the cave of Barma Grande.

RECENT HEARTHS

Five recent hearths were encountered at La Combe. Two of these were outside the cave proper, two were just within the cave

[1] Deshayes had previously noted that *L. littoria* shells from Cro-Magnon resemble closley the same species now living in northern waters.

and underneath the stone wall placed there by the present proprietor, and one well within the cave. These hearths were all recognized by their black color and the loose disturbed condition of the deposit. In one were a few fragments of a very coarse-grained poorly fired kind of pottery, parts of at least two vessels. One of these has a thickness at the rim of 12 mm., the other 18 mm. The curvature proves that the vessels must have been of large size. Judging from the straight squarish finish at the rim the walls of the vessels must have been approximately vertical. They were left here in Gallo-Roman times by a barbaric race. The pottery from the other hearths is comparatively fine-grained, well-fired, and turned on the wheel. It represents types that were common from the III to the XI century A. D.[1] There are fragments of three vessels dating from the V or VI century. The walls are thin, the bottom flat, the sides rounding, with a body diameter much greater than that at the gracefully recurved rim. In one of the three there is a relief ornament on the shoulder produced by pressure of the finger-end against the interior. There is a quantity of iron rust on the rim of this particular sherd. In two of the hearths were fragments of large pitchers of terra-cotta ware. The short spouts are bridged at the rim, and the vertically placed loop handles are especially strong. This type belongs to the Middle Ages from the VIII to the XI century.

Fauna

The fauna[2] of the Archaic Mousterian includes the horse, *Bos primigenius*, *Cervus elaphus*, and *Capra ibex*. The first three of these recurred in the typical Mousterian, where we likewise found *Ursus spelæus*, *Sus scrofa*, *Arctomys marmotta*, and fox. The Aurignacian faunal remains comprise the wolf, *Ursus spelæus*, *Cervus elaphus*, *Sus scrofa*, *Bos primigenius*, *Capra ibex*, and reindeer.

Conclusion

In a summary of the results at La Combe two features stand out prominently: (1) The Archaic character of the oldest industry

[1] Determination by M. Pages-Allary.

[2] For the greater part identified by Dr George F. Eaton.

represented by quantities of rude implements with eolithic facies; (2) the relative abundance of *coups de poing* in the typical Mousterian layer. In excavating this paleolithic cave the author had two purposes in view, both of which were realized. The lesser of these, the systematic gathering of an authentic collection, is by no means unimportant. The chief object was a personal test of the European system of paleolithic classification. The absence at La Combe of distinct alternating sterile layers increased the difficulties in the way of a clear-cut demonstration. To any one familiar with the problem, however, the sequence was unmistakable: Archaic Mousterian, typical Mousterian, and Aurignacian.

Any lingering doubt due to the obscurity of the conditions at La Combe was dispelled by personal tests made at other stations. One day was spent at the rock shelter of La Ferrassie (Dordogne) in company with Messrs Capitan and Peyrony, the lessees. There the sequence is visible at a glance, owing to the comparative darkness of the relic-bearing deposits. Beginning with the Acheulian, I found a *coup de poing* after five minutes' work with my steel hook. Later I gathered in turn typical specimens from the successive horizons—lower and upper Mousterian, and lower, middle, and upper Aurignacian.

At the cave of Castillo, near Puente Viesgo, northern Spain, where I spent two weeks with Professor Obermaier (in charge of the excavations), the sequence is equally clear and even more comprehensive. The section has a total thickness of about 13 meters composed of alternating sterile and relic-bearing layers, the latter numbering twelve. Beginning with the oldest, they are: three layers of Mousterian age, four Aurignacian, one Solutrean, two Magdalenian, one Azilian, and one eneolithic, the last representing the transition from the neolithic to the age of metals. It will thus be seen that in a single station there is represented nearly the entire system of a classification, which is likewise justified by a comparative study of many stations.

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THE RUINS OF ESPIRITU PAMPA, PERU

By HIRAM BINGHAM

IN July, 1911, while visiting Don Pedro Duque in Santa Ana, in the Province of Convención, Department of Cuzco, Peru, I learned that in 1902 a local prospector, named Lopez Torres, said he had seen some Inca ruins in the *montaña* at a difficult place to reach, named Conservidayoc. Lopez Torres had died, and I could find no one, either in Santa Ana or in the village of Vilcabamba, the nearest village of any importance to Conservidayoc, who had seen the ruins or who had even been near them.

Thanks to the coöperation of the government officials, however, we succeeded in finding some Indians in the village of Pampaconas, near Vilcabamba, who had been in Conservidayoc. Enlisting their services as guides and carriers, we descended the hitherto unmapped Pampaconas river for four days, most of the time on foot over a trail that was impassable for dogs or mules.

At the end of a difficult journey in a country where there is extremely little flat land, we found, at an elevation of about 3,300 feet above sea level, a small alluvial plain. It was called Espiritu Pampa, or Pampa of Ghosts, and was covered with dense forest and jungle (fig. 60). A few members of the Campa tribe of savages (figs. 55–58) had made some recent clearings. The region was called Conservidayoc, a Spanish-Quichua hybrid meaning a place possessing the quality of preservation.

In one of the clearings we located the ruins of a village which had eighteen or twenty primitive circular dwellings. All that remained were walls from two to three feet in height with a single opening. The measurements of these ruins are given in the accompanying table.

These houses were arranged in an irregular group. In the woods not far away there seemed to be the remains of other circular

houses of about the same size, with walls from three to four feet in height.

House Number	Shape	Dimensions	Remarks
1	Round	Diameter 15 ft.	
2	Spade-shaped	21 ft. × 16.5 ft.; "handle" 10 ft. wide	
3	Round	Diameter 15 ft.	
4	"	" 15 "	Contained fragments of Inca pottery
5	"	" 18 "	Contained Inca potsherds
6	"	" 17 "	
7	Nearly round	" 21 "	
8	Rectangular	13 ft. × 19 ft.	
9	Oval	16 " × 35 "	Contained Inca potsherds scattered about the floor
10	Round	Diameter 18 ft.	
11	"	" 21 "	Contained potsherds
12	Roughly circular	" 15 "	
13	" "	" 15 "	
14	Round	" 16 "	Contained potsherds
15	"	" 16 "	" "
16	"	" 18 "	" "
17	Apparently semi-circular		Very ruinous condition
18	Round	Diameter 16 "	Contained potsherds

On a promontory above this alluvial plain was a rectangular ruin of Inca style about 12 ft. × 14 ft. Leading from it down to the plain we noticed the remains of a stairway nearly a third of a mile in length made of rough blocks of stone, the steps being four to five feet in width, the risers about a foot in height, and the treads a foot and a half deep.

Half an hour's walk from the ruined village of circular houses is a place called Eromboni Pampa, where there are several terraces and a long rectangular building, 192 feet in length and 24 feet in width, with twelve doors in front and twelve behind, the doors being about 3.5 feet in width. The building was in a ruinous condition, none of the roof remaining, much of the walls being almost totally destroyed, and none of the stone lintels of the doorways being in place. One section of the wall appeared to have been plastered with mud. Near here was a fountain with three short spouts (pl. XIII, 3), somewhat resembling the fountain mentioned by Squier and Bandelier on the Island of Titicaca.

1. INTERIOR OF BUILDING H, SHOWING DOOR AND NICHES IN NORTHERN CORNER

2. INTERIOR OF FRONT WALL OF BUILDING H, SHOWING SMALL VENTILATORS NEAR TOP OF WALL

3. TRIPLE FOUNTAIN AT ESPIRITU PAMPA WITH THREE ROUGHLY CARVED WATER SPOUTS

(Photographs by Hiram Bingham)

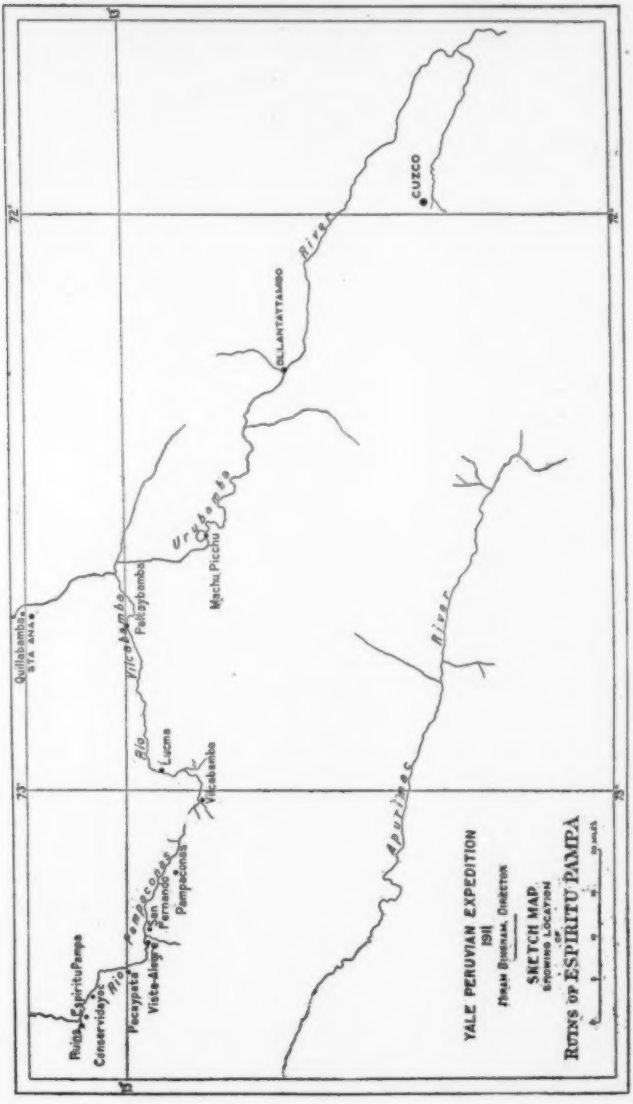
Quillabamba
STA ANA
Río Vilcabamba
Pakaymamba
Machu Picchu
Urubamba River
OLLANTAYTAMBO
CUZCO
Lucma
Vilcabamba
Pampaconas
San Fernando
Vista-Alegre
Pacaypata
Río Pampaconas
Conservidayoc
Ruins Espiritu Pampa
Apurimac River
YALE PERUVIAN EXPEDITION
1911
HIRAM BINGHAM, DIRECTOR
SKETCH MAP
SHOWING LOCATION
OF
RUINS OF ESPIRITU PAMPA
72°
73°
13°
14°

FIGURE 51.

About 200 yards away was the most important group of the Espiritu Pampa ruins. These were all, with one exception, rectangular. All except one or two had gable ends (fig. 59). One of the buildings stood apart and was rounded at one end, having a

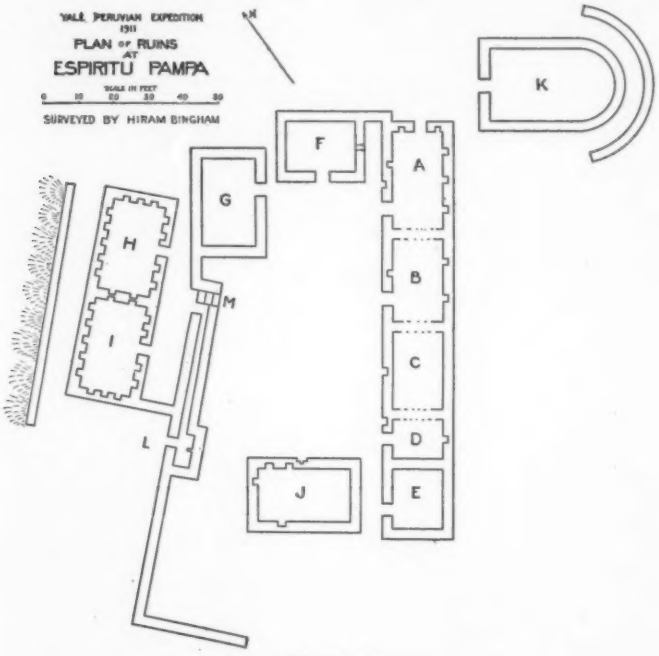

FIGURE 52.

single door at the other end. Another, standing by itself, appeared to have no door at all. Its four niches are arranged with extreme irregularity, and are more than two feet deep, an unusual dimension. It had also a recessed niche outside, facing the little plaza around which the buildings were grouped.

Most of these buildings resemble those at Choqquequirau in being built of rough blocks of stone, not squared or otherwise fashioned, except occasionally on the corners and in the doorways.

FIG. 53.—Pierced grave stone and Inca stone utensils found by Saavedra, and Inca pottery now in use at the sugar plantation of Conservidayoc in the Pampaconas valley. (Photo. by Hiram Bingham.)

FIG. 54.—Three large characteristic Inca jars found at Conservidayoc in the Pampaconas valley. (Photo. by Hiram Bingham.)

The stones were laid in mud. The lintels of the doors were not monolithic, but were made of three or four long narrow stone blocks.

The two most important buildings of this group were carefully constructed, and were well provided with niches symmetrically arranged. The niches in these houses are all small, being about a

FIG. 55.—Group of Campa Indians at Espiritu Pampa, Pampaconas valley. (Photo. by H. L. Tucker.)

foot deep and nearly a foot and a half in height. The gable ends of these houses were ornamented by roughly cylindrical blocks protruding at the point where the wooden rafters had once been. These two houses were situated on an artificial terrace, but their entrances faced the hillside, and they had no windows, unless possibly the small openings high up on the side walls be considered as ventilating windows (pl. XIII, 2).

The drawing (fig. 52) gives a good idea of the general arrangement of this group, and of the relative sizes of the houses.

The inside dimensions of the principal buildings as shown on the plan of the ruins at Espiritu Pampa are as follows:

Room A. Length 28 ft.; width 14.6 ft.; thickness of walls 3.2 ft.
" B. " 23.5 " " 14.6 ".
" C. (Walls in too ruinous condition to make inside measurements practicable.)

Room	D.	(Walls in too ruinous condition to make inside measurements practicable.)					
"	E.	Length 17	ft.;	width	14.6	ft.	
"	F.	" 20	"	"	14.3	"	
"	G.	" 25.5	"	"	15.5	"	
"	H.	" 25.8	"	"	15.5	"	; thickness of walls 2.5 ft.
"	I.	" 26.1	"	"	15.7	"	
"	J.	" 29.5	"	"	15.3	"	
"	K.	" 35	"	"	20.8	"	
Fountain	L.	" 9.3	"	"	4.7	"	; length of spout 1. ft.
							width " " .5 "

FIG. 56.—Campas with painted faces living at Espiritu Pampa in the Pampaconas valley. The one-eyed man on the left is the chief of the small group living there. (Photo. by H. L. Tucker.)

The present Indians call this group of houses Tendi Pampa.

Rooms H and I are on a lower terrace. M is the stairway leading from the upper to the lower terrace. Nearly all the houses have potsherds and some have charcoal remains.

FIG. 57.—A Campa Indian in Conservidayoc. He is said to be one of the leading men of the tribe, and to have three wives. (Photo. by H. W. Foote.)

In rooms H and I the corners are laid up with more care than the other buildings. There are far more niches, and evidently these were the houses of the chief people of the place. As the doors face the terrace, there is no outlook, and the houses had no windows

except little ventilators, as shown in plate XIII, 2. In these two rooms we found fragments of better pottery than in the other buildings. This may have been due to the fact that H and I appeared to be unknown to the Indians, as they had been covered with very dense

FIG. 58.—Two of the wives of the chief of the group of Campa Indians at Espiritu Pampa, and three of his children. (Photo. by H. L. Tucker.)

vines and heavy jungle. The niches in these two rooms were about 1 foot in depth, 1.5 in height, and 1.2 in width. These were roughly the measurements of all the niches in the group, except those in E.

The walls of room K were in a very ruinous condition, and it was

impossible to be sure whether this building was constructed at the same time as the others or not. There is no reason why it should not have been a primitive chapel, built by the missionaries near the old Inca settlement. The fact that the walls have not stood as well as those of the other structures might be taken to indicate a

FIG. 59.—Gable end of a house at Espiritu Pampa.
(Photo. by Hiram Bingham.)

later and more hasty construction. The semicircular end of the building is not characteristic of Inca architecture. At the same time, the primitive circular and oval houses near the modern Indian

huts might lead one to conclude that this was an earlier ruin than the characteristic Inca houses near by.

A small fountain (fig. 61) near the doorless house gave an opportunity for water-jars to be filled without going any great distance.

FIG. 60.—General view of typical jungle at Espiritu Pampa, showing in foreground the east end of building H, with projecting cylindrical stone.
(Photo. by Hiram Bingham.)

In and around the houses were remains of water-jars, numerous potsherds, and pieces of several fine Inca aryballi. Two or three small bronze axes had been picked up in this vicinity by the Indians, and Señor Saavedra, a Peruvian who had a very primitive sugar plantation not many miles away, was using three or four large Inca jars which he had found in the woods near the ruins (fig. 54).

Near the plantation Saavedra reported discovering several bottle-shaped graves covered with flat stones. One of these flat stones was pierced, as shown in the illustration (fig. 53), and this

FIG. 61.—Single fountain near building H at Espiritu Pampa.
(Photo. by Hiram Bingham.)

hole was covered with a thin piece of beaten silver. In the graves he said he had found nothing except some very yellow clay. Besides the bronze axes and the characteristic sherds, he had also found several stone mortars and pestles.

With one exception, everything about the fragments of pottery and the architecture of the houses was unquestionably Inca. This exception was the presence of a dozen or fifteen roughly made

Spanish roofing tiles of varying sizes. On account of the small number of them and of the great irregularity of their sizes (one of them was 1.6 feet in width, another 1.9 in width; one was 1.6 feet in length, another 1.9 feet), it seemed to me possible that these tiles had been made experimentally by recent Peruvians or possibly

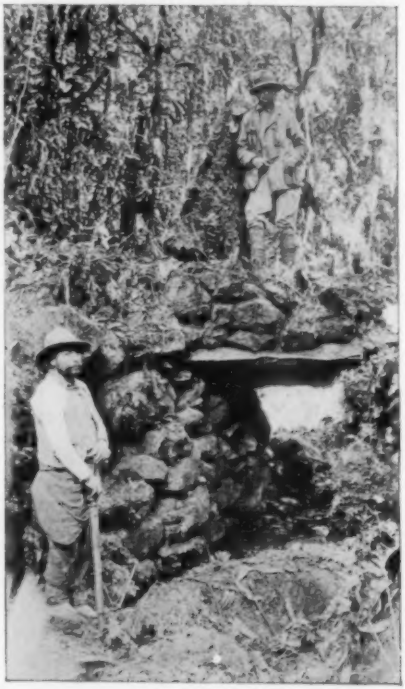

FIG. 62.—Stone bridge at the ruins of Espiritu Pampa. (Photo. by H. W. Foote.)

early Spanish missionaries, who might have come to this place three centuries ago. The Indians could offer no explanation of the mystery. Apparently none of the houses ever had tiled roofs, as the number of fragments was not enough to cover more than a few square feet, and nearly all were outside the buildings.

I believe that the ruins of Espiritu Pampa were constructed by the Incas, possibly soon after the Spanish occupancy of Cuzco, when, under the young Inca Manco and his sons, they occupied this region. Arable land was extremely scarce, and here on this alluvial

FIG. 63.—West end of building F, showing projecting cylindrical stones and two roofing tiles, a number of which were found lying near these ruins.
(Photo. by Hiram Bingham.)

fan, the largest within a radius of many miles, they were able to raise coca, peanuts, corn, yucca, and other semitropical products.

In the *Relación* of Diego Rodriguez de Figueroa of his visit to the Inca Titu Cusi Yupanqui (published and edited by Dr Richard Pietschmann), there is an account of his meeting the Inca in the village of Pampaconas. The Inca evidently came from

somewhere down in the *montaña*—it may have been from Espiritu Pampa.

Rodriguez relates how he received a present at Pampaconas from the Inca Titu Cusi of a macaw and two hampers of peanuts.

It was interesting to find that the Indians at Espiritu Pampa had eight tame macaws which they were planning to send to market, and that Saavedra had quantities of fine peanuts.

There appears to be no reason why the ruins of Espiritu Pampa are not those of the residence of the Inca Titu Cusi Yupanqui in 1565.

So far as I am aware, no other Inca ruins have been found so low down in the Amazon jungles. The elevation here is about 3,300 feet above sea-level. The location is lat. 12° 55′ S., long. 73° 24′ W., as determined by Mr Kai Hendriksen, the topographer of the expedition.

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PREHISTORIC OBJECTS FROM A SHELL-HEAP AT ERIN BAY, TRINIDAD

By J. WALTER FEWKES

Introduction

IN the winter of 1912–13 the author visited the Lesser Antilles with a view of gathering data for a contemplated memoir on the aborigines of those islands.[1] He visited the more important private collections of prehistoric objects, as well as those in public libraries and museums on the islands. Incidentally he carried on excavations, of a limited nature, at Banana bay, Balliceaux, where the Black Caribs of St Vincent had a settlement before they were deported to Ruatan on the coast of Honduras. Excavations believed to be important were made in a shell-heap in Trinidad, one of the largest and culturally most important of the Lesser Antilles. The present paper considers the more instructive results of the work last mentioned.

Trinidad is well adapted for the home of an aboriginal people. It has constant fresh water, an abundant supply of food, its mountains and plains being well stocked with animals, the sea affording an abundance of fish, mollusks, and crabs, and its soil yielding a large variety of edible roots and fruits. The island lies in full view of the coast of South America and was visible to the natives inhabiting the Orinoco delta. On its lee side the water is shallow, but landing can be made at many places in small craft. There are high hills in the interior, level savannahs along the coasts as well as inland, and streams of fresh water that open into brackish lagoons.

Early historical references to the Indians inhabiting Trinidad date from the discovery of the island by the great Genoese. As

[1] This visit was made under the joint auspices of the Bureau of American Ethnology and the Heye Museum. The specimens collected are in the latter institution.

Columbus on his third voyage, in 1498, sailed with his companions along the shore of the newly discovered island which he had named after the Holy Trinity, writes Peter Martyr, "From their ships they could see that the country was inhabited and well cultivated; for they saw well-ordered gardens and shady orchards, while the sweet odours, exhaled by plants and trees bathed in the morning dew, reached their nostrils." Following the shore somewhat farther, Columbus "found a port sufficiently large to shelter his ships, though no river flowed into it." There was no sign of any habitation in the neighborhood of this harbor, but there were many tracks of animals similar to goats, and in fact the body of one of these animals was found. On the morrow "a canoe was seen in the distance carrying eighty men, all of whom were young, good looking, and lofty of stature. Besides their bows and arrows, they were armed with shields, which is not the custom among the other islanders.[1] They wore their hair long, parted in the middle and plastered down quite in the Spanish fashion. Save for their loin-cloths of various colored cotton, they were entirely naked." Columbus naïvely declared that he followed in this voyage the parallel of Ethiopia, but recognized that the people he found in Trinidad were not Ethiopians, for the "Ethiopians are black and have curly, woolly hair, while these natives are on the contrary white [lighter in color?] and have long, straight blond hair."[2]

According to Las Casas, who is said to have possessed accounts of the third voyage of the great Admiral which are now lost, the sailors of Columbus saw human foot-prints on the shore of Trinidad and discovered implements showing that the aborigines were fisherman. As Columbus skirted this coast he observed houses and cultivated fields "*bien probada a labrada*," indicating that

[1] The Orinoco Indians had elaborate shields.—J. W. F.

[2] It is not improbable that in ancient times there was frequent communication between the inhabitants of the mainland of South America and Trinidad, a communication that was kept up until quite recently, for it was only a few years ago that canoe-loads of Indians were accustomed to land at Erin bay, at rare intervals, and make their way by an old Indian trail to the present city of San Fernando, via Siparia, through the original forests. These visits are now made primarily for trade and are probably a survival of a custom quite common in prehistoric times. Well-marked "Indian trails" can still be followed through the forest depths.

agriculture as well as fishing was practised by the natives. In the meager reference to the people given by Las Casas, he says incidentally that "they were lighter and better proportioned than those of the other Antilles, and wore their hair long like the women of Castile. They wore variegated cloth head-bands, and girdles on the loins. The men were armed with bows and arrows, and, unlike the inhabitants of the other Antilles, had [war] shields."[1] The identity of these people is not clear from this early account, but somewhat later they were referred to as Arawak.

Sir Robert Duddeley, in 1595, made a journey through Trinidad and lodged in "Indian towns," finding the natives a fine-shaped and gentle[2] (*sic*) people, naked and painted red.

Later, Sir Walter Raleigh enumerated the following "nations" or races in Trinidad: Yaios, Amecos (Arawak), Salvagay (Salivas), Nepoios, and Carinepagotos. At the end of the seventeenth century there were said to have been fifteen Indian towns in Trinidad, but the 2,032 aborigines recorded as inhabiting the island in 1783 had dwindled to 1,082 ten years later.[3]

In some of the early historical references to Trinidad, all the natives are classed as Arawak.[4] Thus Davies[5] writes: "It was when the Captain was engaged for the war against the Arawages who inhabit Trinity [Trinidad] Island, and to that purpose he made extraordinary preparations." In other references to the Trinidad aborigines which might be quoted, the name Carib does not occur, and indeed there is no good evidence that there were Carib on the island, notwithstanding several of the above-mentioned tribes are supposed by some authors to be divisions of "Caribs."

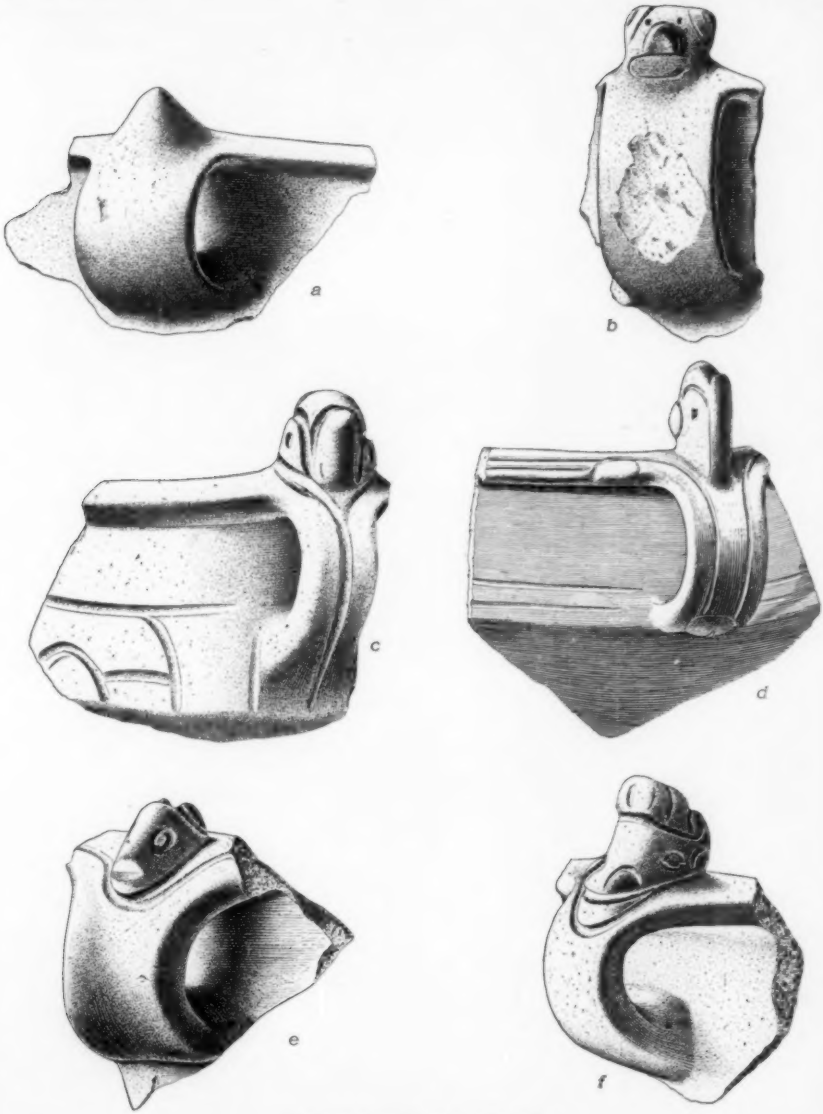
[1] The Warrau, who lived on the mainland, have a large square shield called *ha-ha*, used in athletic sports. (See E. F. im Thurn, *Among the Indians of Guiana*, London, 1883, p. 327.)

[2] This is not characteristic of the Carib, according to ideas current then or in later times. It may be noticed, *en passant*, that there is no mention of Carib in the early accounts of the Indians in Trinidad seen by Columbus.

[3] On Bryan Edwards' map of the West Indies an "Indian town" appears on the east coast of Trinidad.

[4] The historical evidences all agree that the people of this island were an agricultural race allied in culture to Arawak.

[5] *History of the Caribby Islands*, 1661.



POTTERY OBJECTS FROM TRINIDAD

a. Bowl handle with conical projection. *b*. Bowl handle with head. *c, d*. Sections of vessel with animal heads. *e, f*. Handles with animal heads.

The nearest approach to pure-blood aborigines of Trinidad live at Arima, in the middle of the island; but aboriginal features can still be found elsewhere among the inhabitants, although the author was unable to learn of a person who could speak any aboriginal language once spoken on the island, or that there were any Indians of pure blood remaining. There survive in Trinidad numerous Indian place-names, as Arima and Naparima; but while some of these suggest names existing in Porto Rico and St Vincent, they are as a rule dissimilar, indicating different languages. The prehistoric inhabitants of Trinidad were probably linguistically distinct from those of the other islands.

Additional knowledge of the culture of the aborigines of Trinidad can be acquired either by archeological research or through survivals in folklore, which are very common.

Erin Bay, Trinidad

The small settlement at Erin bay consists of a few shops, two churches, and a number of dwellings along a well-built road that passes through the town to a warehouse on the shore. Small steamers anchor at intervals a few miles from the coast, but the best way to reach the settlement is by steamer from San Fernando to Cap de Ville and by carriage from the landing. It can also be visited from San Fernando by road, via Siparia. The only accommodations for remaining over night at Erin are at the Government House.

The present population consists almost wholly of blacks and East Indian coolies indentured to English planters or overseers, who own or manage the larger estates. The vernacular is a French patois of peculiar construction and incomprehensible to any but the inhabitants. The plantations are large and considerably scattered; they produce profitable crops, mainly cocoa and tropical fruits that are shipped to Port of Spain for export.

Not far from Erin there are remnants of the primeval forests in which game, monkeys, and tropical vegetation abound. The land is rich and productive, and the estates are prosperous. There are a few small kitchen-middens on the coast, not far from Erin, some

of which will well repay excavation, but their isolation is a practical difficulty unless complete and systematic work be done.[1]

There are several shell-mounds on the eastern coast of Trinidad which show fragments of pottery and other rejecta, and several heaps on the southern shore that are superficially composed of shells. In the so-called shell-heaps at San José, the shells are few and inconspicuous, but in a midden at Point Mayaro, which covers a fairly large area, many characteristic potsherds may still be found on the surface. As a rule these shell-heaps are not far from the shore, but in several instances they lie inland.[2]

Fragments of pottery from this region sent to the author by Mr Dearle of Port of Spain differ from those of Erin bay, but apparently were made by people in the same stage of culture. There is a small collection from this region in the Heye Museum, obtained after this report was completed, which contains a number of highly instructive heads and other fragments. This pottery is colored white and purple-red, whereas that from the shell-heap at Erin bay is painted bright red, although the color is often worn, showing gray beneath.

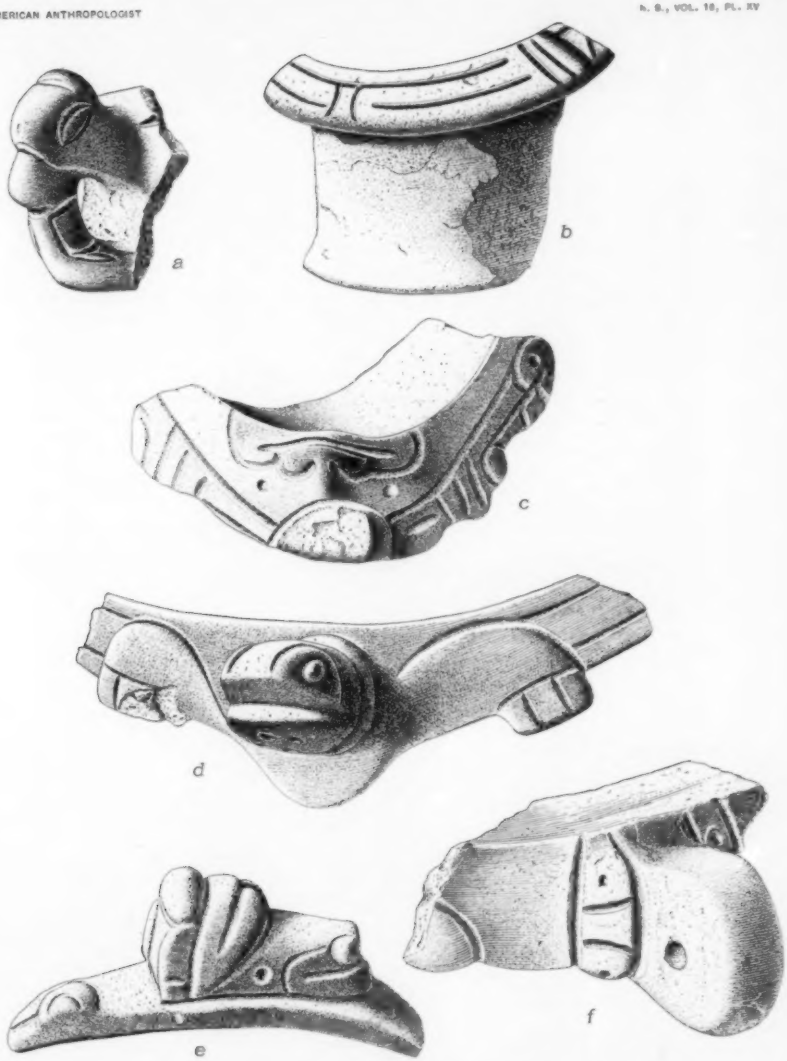
Tcip-Tcip Shell-heap

The largest shell-heap in Trinidad, locally known as Tcip-tcip hill, situated at Erin, a short distance from the shore, covers several acres and forms a considerable elevation. Upon this mound are constructed the government buildings, the police station, and the warden's office. The author obtained from the assistant warden, Mr John Menzies,[3] permission to make excavations in that part of the shell-heap situated on Crown land, but was obliged to suspend

[1] Trinidad has never been regarded as a remunerative field for archeological investigation. The first results of the author's efforts in the island were not very promising, but after some discouragement, excavations of a shell-heap at Erin bay, in the Cedros district, yielded important data bearing on the former culture of the aborigines in this part of the island.

[2] Efforts to find evidences that man inhabited the numerous caves in Trinidad, or used them for burial purposes, have not been rewarded with success, although many caves, especially those near Pedro Martin's basin, were examined.

[3] The author is very grateful to Mr Menzies for his aid, and takes this opportunity to thank him for his many kindnesses while at Erin bay. He is likewise indebted to Mr Dearle, of Port of Spain, for voluntary aid in the excavations.



POTTERY OBJECTS FROM TRINIDAD

a. Handle with modified head. *b*. Section of rim of vessel. *c*. Rim of effigy bowl. *d*. Rim with head and flippers. *e*. Rim with head. *f*. Flattened disk with circular handle.

work on the private land adjoining, as it could not be thoroughly explored without injury to the property. The specimens, although limited in quantity, are the most numerous known, and give a fair idea of the nature of the contents of a typical Trinidad shell-heap.

Tcip-tcip hill was first described by Mr Collens, whose excavations therein were rewarded with several fine specimens, now on exhibition in the Victoria Institute at Port of Spain. These objects are figured by Collens in his *Handbook of Trinidad*, and are also illustrated by the present author in his *Aborigines of Porto Rico*.[1]

Some limited excavations were also made at Tcip-tcip hill by the Reverend Thomas Huckerby, of San Fernando, several years after Collens finished his work, but only a few fragments of pottery, now in the Heye Museum, were obtained.

The extent of the Tcip-tcip mound could not be determined, as it extends far into the cocoa plantation under a dense tropical growth. Its surface, except where cleared by the Government for the erection of buildings, was covered with vegetation. Some distance from the hill, where a ceiba tree had fallen, the roots showed a considerable deposit of shells, indicating that the extent of the heap was great and furnishing a clue for continued excavations.

The shells in the mound at Erin are in layers alternating with vegetable mold, ashes, and soil, forming a sticky mass[2] that clings tenaciously to the specimens and almost conceals their identity. The terra-cotta heads, when dug out of the earth, were completely coated with mud which had to be removed by washing, and by so doing some of the red pigment which covered them disappeared. As the ceramic objects had been painted after they were fired, the color is not permanent, and the length of time they had been in the ground caused it to come off even more readily.

As mentioned, a vertical section of the mound exposed alternating layers of shells and ashes, mingled in some cases with humus and with frequent fragments of charred wood. Sometimes the strata were composed entirely of shells, but their thickness was not uniform, especially at the periphery of the mound. Over the entire

[1] *Twenty-fifth Annual Report, Bureau of American Ethnology*, pl. lxxxv.

[2] During the author's work in Trinidad it rained almost every day.

surface of the mound there was a dense growth of tropical vegetation, with clearings at intervals for cocoa and plantains. The fallen trunks of palms, live shrubs, and trees formed an almost impenetrable jungle extending into the neighboring forests where the ground had not been cleared. On the sea-side the mound is only a short distance from the shore and is separated from the bay by a lagoon inclosed by a narrow strip of land. Near by is a spring from which the shipmates of Columbus obtained drinking water in 1498.

In their general character the objects found in the Tcip-tcip mound are not unlike those occurring in other West Indian middens, although they differ in special features. As is usually the case, the majority of the specimens are fragments of pottery, which are among the most instructive objects by which culture areas can be defined. These will be considered first.

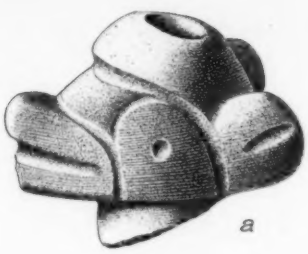
Pottery

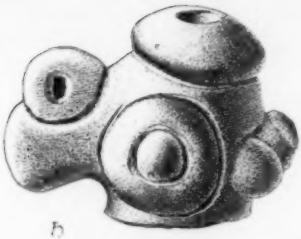
Comparatively little has been published on the pottery of the Lesser Antilles, although specimens of whole jars and innumerable fragments are found in various museums and private collections. The Heye Museum is the richest in the world in these objects. The potter's art was practised by aboriginal people from Trinidad to Cuba and the Bahamas, but while there is general similarity in the product, there are very marked specific differences.

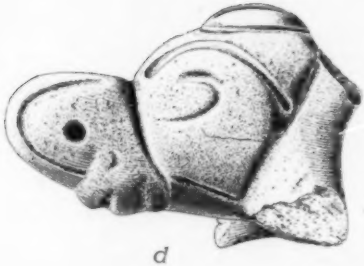
The several beautiful specimens of pottery in the Victoria Institute at Port of Spain, Trinidad, two of which, through the kindness of the officers of that institution, were photographed, have been reproduced by the author,[1] who has quoted the description in the appendix in Collens's *Guide to Trinidad*, here reprinted as it contains practically all that has been published on the archeology of Trinidad.

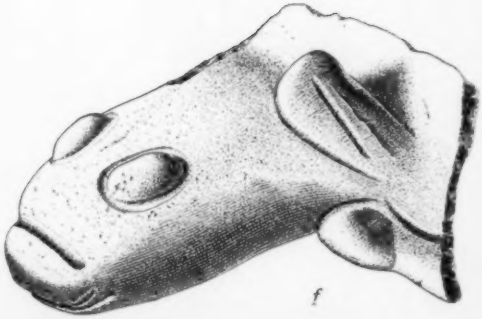
"The discovery of some interesting Indian relics at Erin during the past month [May, 1888] is, although I had brought my work to an end, of sufficient importance to demand a brief notice. On the occasion of a recent visit of His Excellency, Mr. W. Robinson and suite to the southern quarter of the island, the Hon. H. Fowler, who was one of the party, observed a mound of shells. Dis-

[1] Aborigines of Porto Rico, *Twenty-fifth Annual Report, Bureau of American Ethnology*, pl. lxxxv.









POTTERY OBJECTS FROM TRINIDAD

a, *b*, *c*. Bottle heads. *d*. Head. *e*. Conventionalized head. *f*. Elongated head.

mounting, a closer inspection revealed some pieces of rude pottery, and subsequent excavations by Mr. A. Newsam, the Warden, led to the unearthing of some capital specimens, indicating beyond a doubt this had been the centre, at some period more or less remote, of an Indian settlement. The pottery is of two kinds, glazed[1] and unglazed, the latter dating back to a time anterior to the discovery of the New World, for the art of glazing was unknown to the early Indians, nor is it likely that they became acquainted with it after the Spanish occupation."

The following specimens are figured by Collens:

FIG. 1. A hollow stone, smooth in the concave part, forming a rude mortar. The Indians used a hard, smooth pestle for pounding their seeds and grains.

FIGS. 2, 3, 4. Heads of animals in burnt clay, more or less grotesquely shaped. The eyes and mouth are exaggerated, a few, broad, bold lines serving to bring out the most striking features. In fig. 4 the head of the monkey is fantastically crowned. All these are probably deities or ornamented attachments of earthen vessels.

FIG. 5. A well shaped squirrel. Perhaps a toy whistle.

FIG. 6. An earthen bowl in fine preservation, about the size of an ordinary vegetable dish. With the lid, which is unfortunately missing, there would doubtless be a good representation of a turtle; as it is the head and tail are clearly, and the limbs somewhat clumsily shown."

The best entire vessel found by the author in his excavations at the Erin bay midden is the shapely brown vase shown in figure 64. This receptacle was buried two and half feet beneath the surface, in a thick layer composed wholly of shells. Its association and situation show no indication that it was deposited with care, and it could not have been a mortuary vessel, as no bones were found near by: it appeared rather to have been abandoned or dropped by its owner where it was found. The shape of this vase is an uncommon one in prehistoric West Indian pottery. In form it is

FIG. 64.—Bowl with ring at base and incised decoration.

[1] The author regrets that he cannot support Mr Collens's statement that glazed pottery occurs in the Tcip-tcip mound.—J. W. F.

enlarged equatorially, and tapers above to a recurved lip, which, as is rarely the case in West Indian earthenware, is without handles or lugs, and below, in which region the exterior is slightly convex, to the base. Decoration in the form of incised lines appears on the surface of the upper area, but the under portion is smooth and without ornamentation. This decoration consists mainly of parallel grooves alternating with crescents, and circles with central dots. The walls of the vessel are thinner than is usual in West Indian pottery, and the surface is little worn. An exceptional feature of this receptacle is the base, which consists of a circular stand, thus rendering stability to the vessel. Similar bases of other specimens, being much more substantial than the bodies, are frequently preserved entire while the remainder has disappeared. This form of base is of common occurrence in fragments also from St Vincent and Grenada, but is rare in Porto Rico.

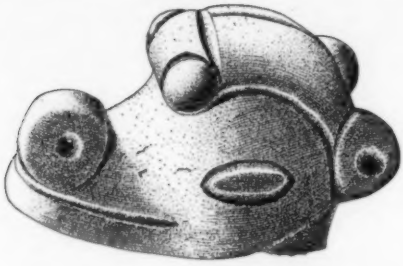
Several bowls had been so long in the moist soil of which the Tcip-tcip mound is composed that they crumbled into fragments when an effort was made to lift them from their matrix. Although

FIG. 65.—Bowl with flat base.

the forms of these bowls vary somewhat, several resemble that shown in figure 65, which may have been used for condiments or for pigment.[1] The walls of this vessel are thick, with smooth undecorated surface; its bottom is flat. The rim shows two opposite imperfections that may indicate the position of heads which served as handles.[2]

[1] Many fragments of red and green pigment were found in the mound. The majority of the vessels here described are of gray or bright red ware.

[2] After pottery objects were taken from the mound they hardened considerably, but the handles of this vessel may have been broken from the rim previous to its recovery.

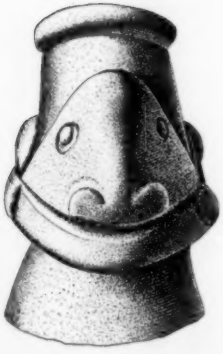


a

b

c

d



e

f

POTTERY OBJECTS FROM TRINIDAD

a, *b*, *c*, *f*. Heads. *d*. Head with broken rim. *e*. Head of bottle.

Figure 66 represents a small rude pottery rest, of spool-shape, with flat base, very thick walls, smooth undecorated surface, and somewhat flaring rim. Its size suggests that it was once used as a toy or as a ceremonial vessel, but it was more likely designed as a support for a bowl. Some beautiful pottery rests from St Vincent are in the Heye collection, several of which, in a fragmentary condition, were obtained by the author at Balliceaux. The most elaborate of these measures about six inches in height, is perforated on the sides, and has a face in high relief. This object will be fully described in a subsequent report.

FIG. 66.—Pottery rest.

The rectangular clay box shown in figure 67 has thick walls, a flat bottom, and squatty legs continuous with the sides. Its longer sides bear incised S figures surrounded on three sides by a straight furrow. The narrow sides of the vessel are ornamented with incised crescents also partly framed with straight lines. From the broken places at the two opposite shorter sides of the rim it would seem that the vessel had been provided with handles, probably in the form of heads, but it is also possible that a head may have been attached to one side and a tail opposite, thus producing an effigy vessel. Rectangular receptacles of this kind are rare in collections of West Indian pottery, a fact which imparts special interest to this example.

FIG. 67.—Rectangular vessel.

The object shown in figure 68 is a fragment of a bowl, shaped like a turtle, with head and tail, and the left legs drawn up to the

remaining side of the body. This interesting specimen is almost identical with the unbroken turtle effigy vase figured by Collens, to which reference has already been made. Although nearly half

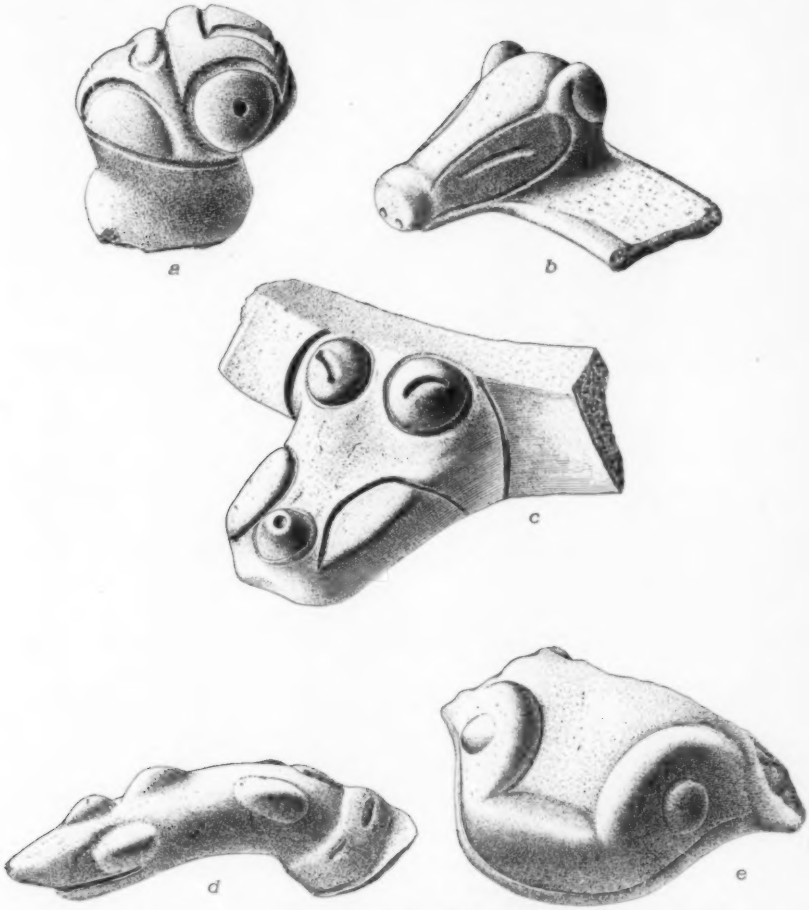
FIG. 68.—Fragment of a turtle effigy bowl.

of this specimen is absent, enough remains to enable a determination of its form and of the general character of the relief decoration, which was no doubt identical on the two sides.[1] The head, which is not attached directly to the rim of the vessel but to the upper side, is rather long, with blunt snout, and mouth extending backward;

FIG. 69.—Effigy bowl possibly representing a turtle.

the nostrils are indicated by pits, the eyes by slits. The tail consists of two buttons separated by grooves, and the fore and hind

[1] Unlike the clay turtle figured by Collens, this specimen has no raised rim about the base. We know from historical sources that the turtle played an important part in Antillean mythology, which accounts for its frequent appearance on ceramic and other objects.



POTTERY OBJECTS FROM TRINIDAD

a, *b*. Heads. *c*. Head on section of rim. *d*. Head and body of shark. *e*. Flattened head.

legs, with no indication of flippers, are modeled close to the body. Like many Antillean earthenware vessels, the walls are thick and the rim not decorated.

The vessel shown in figure 69 is also supposed to be a turtle effigy, an almost featureless head being attached to the rim. Opposite the head the rim is broken, indicating where there may have been formerly an appendage representing the tail. This object fortunately is one of the few whole specimens in the collection.

In sharp contrast with the thick-walled, coarse bowl last mentioned, is a fragmentary vessel (fig. 70) which may be regarded as one of the finest and most elaborately decorated specimens found at Erin bay. This beautiful example represents the highest type of incised decoration of which the Antillean potter was capable. It shows the base and practically a quadrant of the lateral decoration of the bowl, which was probably repeated on the missing side.

FIG. 70.—Decoration on food bowl.

In addition to the specimens of entire pottery above described, many fragments, some of which represent characteristic forms, were excavated from the Erin shell-heap. The best of these are sections of rims and handles, which, being less fragile, are more readily preserved. Their chief features will now be considered.

HANDLES OF VESSELS

Considerable variation occurs in the form of the handles of earthenware vessels, several of which are still associated with portions of the side or rim, while others show how the handle was

attached at both extremities. Some of the handles are mere knobs or bosses, other examples are in the form of elaborate heads, the various modifications of which recall the pottery heads of Porto Rico and Santo Domingo.

The handles of bowls shown in the accompanying illustrations (pl. XIV–XIX) are broken from their attachments; sometimes they are very simple in form, but more commonly they represent heads which vary more or less in shape. The specimen (pl. XIV, *a*) which has a fragment of the bowl attached is one of the simplest forms, loop-shaped with a conical projection near the rim. The handle is broad, with ample space for the fingers. In some specimens the handles are even simpler, as they are without the conical elevation, while the upper end, instead of being attached to the rim, rises from the side of the bowl. In other examples the handle takes the form of a lug or knob.

In plate XIV, *b*, instead of a conical knob, the handle consists of a simple head in which the eyes, nose, and mouth are crudely indicated, as in other West Indian vessels.

Plate XIV, *c*, shows a specimen in which the head surmounting the handle is modeled in greater detail, and a sufficient part of the body of the bowl remains to show the incised ornamentation of the exterior surface as well as of the handle. Incised lines unite at the throat and continue down the middle of the handle throughout its length.

The figure of the handle illustrated in plate XIV, *d*, is similar to that of plate XIV, *c*, but the two incised lines ornamenting it continue along the rim of the bowl and end above an oval elevation evidently representing the body of the animal. The slender head of the animal projects upward; the eyes are small, and incised crook-shaped lines extend along the head and partly surround the eyes. The equatorial girt of this vessel is somewhat larger than the circumference of the rim and is decorated with two incised parallel lines.

Another variation in form of effigy handle is shown in plate XIV, *e*, the head represented in this case having a somewhat pointed snout, oval eyes surrounded by circular grooves, an open mouth,

and projections separated by grooves on the head. This is more massive than the handles before described; it is not incised, and its breadth at the middle is somewhat less than at the point of attachment to the body of the vessel.

One of the most elaborate heads ornamenting a handle partly free from the body of the vessel is shown in plate XIV, *f*. This handle, like the preceding, is thick and broad. When placed with the rim of the vessel uppermost, the two grooves may be identified as lips, the crescents above them as nostrils, and the ring on the side as an eye. If, however, the figure is turned in such manner that the rim is vertical, the eyes and what was identified as the forehead become the snout with nostrils and mouth.

The handle shown in plate XV, *a*, instead of being broad is small and rounded; it is decorated with incised lines, and the effigy portion is larger than the handle proper. The head is protuberant and the eyes lenticular. Although the other features of the head are considerably distorted, it would appear that the handle in this specimen extends from the top of the head instead of from the neck, thereby turning the mouth uppermost, as in the last example.

In the sections of the rims of vessels next to be described no handles are present. Plate XV, *b*, represents a rim ornamented with two incised, horizontal, parallel furrows, alternating with vertical grooves. This rim is broad and flaring, with rounded margins, imparting a convex surface to this portion of the bowl, which has a straight body and a flat base.

The incised ornamentation on the example shown in plate XV, *c*, is more elaborate than the last. In this case the rim is quite broad, somewhat pointed, and covered with furrows, indicating an elaborate figure which unfortunately cannot be wholly determined on account of its incompleteness.

Plate XV, *d*, exhibits a well-modeled rim probably representing a turtle with open mouth and rounded eyes. The pits under the lower jaw are uncommon, but like other features are suggestive of a turtle's head. The two appendages at the side evidently represent flippers.

The well-modeled head indicated in plate XV, *e*, is attached to

a section of the rim, but placed lengthwise instead of vertically as in other specimens. The snout is elongated, while the mouth extends far backward; the eyes are indicated by pits, and a round projection separated by grooves appears on the forehead.

The degree of conventionalization in these specimens is sometimes very great, as in plate XV, *f*, where practically all resemblance to a head is lost. Here we have a disk attached by one margin to the rim of a bowl, which is ornamented with a rude incised design. A handle distantly related to the last is illustrated in plate XVI, *a*.

It often happens that the walls of the orifice of a flask-shaped bottle are modified into a perforated clay head,[1] as in the specimens shown in plate XVI, *a*, *b*, *c*.

Plate XVI, *b*, *c*, *d*, *e*, show varying forms of effigy heads which served as handles of vessels. All of them have well developed nostrils, eyes, and other facial features. The presence of nostrils differentiates these heads from many others and affords a hint, although obscure, as to the identity of the animal designed to be represented. We find similar nostrils in certain three-pointed stone idols from Porto Rico, which we have other good reasons to identify as reptiles, hence the conclusion is fairly logical that these heads were intended to represent similar creatures.

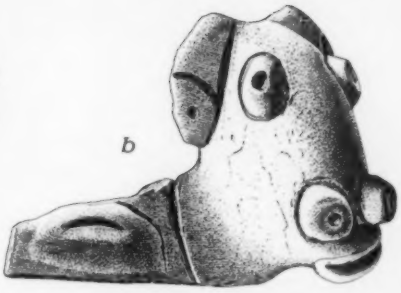
The two projections on top of the head and the form of the eyes and nose of the effigy shown in plate XVI, *f*, are exceptional. The crescentic mouth is suggestive of the same organ in certain undetermined Porto Rican stone idols of three-pointed form.

A remarkably well modeled reptilian head is shown in plate XVII, *a*. Its great elongation distinguishes it from the head shown in plate XVII, *b*, which is almost spherical and has the organs represented by incised lines rather than in relief. The same general tendency to rounded forms is exhibited in plate XVII, *c*, *d*, *e*, but in these the nose is notably exaggerated.

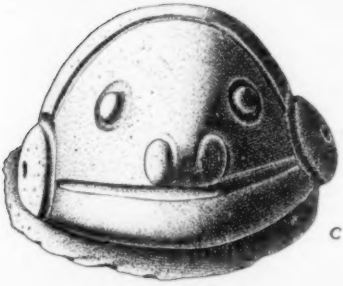
The head, and especially the position and form of the nose, of the handle shown in plate XVII, *f*, remind one of pottery from the Grenada region, a specimen of which is figured in the author's

[1] This is the first example of a head from a prehistoric flask-like vessel from Trinidad or the Lesser Antilles, although common in Hayti and Santo Domingo.

a

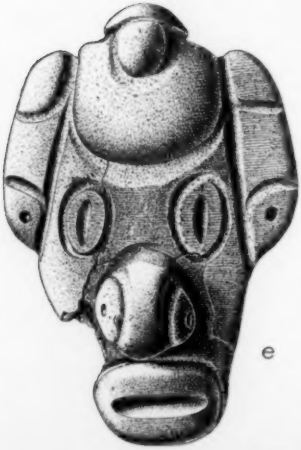


b



c

d



e

f

POTTERY OBJECTS FROM TRINIDAD

a. Round knob of vessel. *b–f*. Heads.

report on the *Aborigines of Porto Rico*.[1] In this instance eyes, nose, and mouth are indicated by hemispherical protuberances; the nostrils are represented by parallel slits, the eyes by pits in the middle of a circular disk, and the lips by a transverse furrow in a circular boss. A somewhat similar method of indicating these parts is shown in plate XVIII, *a*, while in *b* the form of the head reminds one of a peccary, or wild hog. The mode of attachment to the rim of the vessel is quite apparent in this instance.

The unpaired nostril of the effigy shown in plate XVIII, *c* is indicated by a single pit in the summit of a conical projection; the eyes are prominent and contain crescentic slits. This head, as shown by a fragment of the rim still attached, projected farther beyond the bowl than is usually the case. The flat form of the head suggests an alligator, but it was evidently designed to represent a mythological conception rather than a realistic animal.

If superficial likenesses of conventionalized figures are regarded as reliable for identification, plate XVIII, *d*, might well be considered to represent a shark's head, for the position of the mouth in this specimen is well below the snout, which tapers above uniformly to its end. There is no doubt that the protuberances above the mouth were intended to represent eyes, while those near the rim of the vessel may have been designed for fins or other organs. No representations of nostrils or ears are apparent in plate XVIII, *e*, but the broad flat head has two eyes and a well developed mouth. The break at the point of attachment shows that it was a handle of a vessel.

The heads illustrated in plate XIX, *c*, *d*, *e*, cannot, by reason of their highly conventionalized character, be readily assigned to any of the forms above considered. There remains a considerable number of other pottery heads obtained at the Erin Bay midden, some of which are too greatly mutilated for identification.

FIG. 71.—Pottery stamp.

[1] Op. cit., pl. lxxxiv.

Figure 71 illustrates a clay stamp, one of a class of objects not uncommon in the Lesser Antilles. The face of this specimen is circular, with an incised design, and was probably used either for decorating pottery or in a manner similar to the clay cylinders elsewhere described.[1] These stamps are often elaborate. Some of those lately obtained by Mr de Booy from Santo Domingo bear images on their surfaces and rattle when shaken.

Stone Implements

Stone implements from the Erin Bay midden consist of celts, axes, chisels, pecking-stones, mortars, pestles, and other forms. A number of almond-shaped celts, like Porto Rican petaloids, were collected in Trinidad. The most interesting axe is flat, with notches cut at opposite edges, as shown in figure 72.

There is general similarity in the forms of the mortars found in the West Indies, but the pestles vary in different islands. In the

Fig. 72.—Notched axe.

Fig. 73.—Jadeite pendant.

Santo Domingo-Porto Rico area pestles commonly have handles decorated with animal heads or even with entire animals, but in the

[1] *Aborigines of Porto Rico*, pl. lxxxvi, *a*.

St Kitts region they are simple unornamented cones, pointed at one end, circular or oval at the opposite end, but with no differentiation of base, handle, or head. The Guadeloupe and St Vincent pestles are of the same general character as those from St Kitts, which are identical with those found in Trinidad.

There are several stones in the collection from the Erin shell-heap that were evidently used for pecking other stones or for pounding pigments or bruising roots. They are elongate, sometimes angular, with shallow pits on two or all four faces which served to facilitate handling by providing convenient places for the thumb and forefinger. Circular stone disks, probably used as grinders, were likewise found.

A small finely polished pendant (fig. 73) made of jadeite, perforated at one end, was found buried deeply among the shells in the Erin Bay midden. In finish this beautiful specimen recalls certain finely polished green petaloids collected in Porto Rico and other islands. The stone of which these objects are made does not occur in the West Indies, a fact indicating that the pendant, as well as the celts, was brought from the mainland, probably from South America.

Bone Objects

Considering their occurrence in soil saturated with moisture, it is remarkable that bone objects were preserved in the Erin Bay mound, but many unworked animal bones and a few bone implements were exposed in the course of the excavations. One of the latter is from an unidentified animal, and its flattened form resembles a spatula used in pottery making. Among other bone implements may be mentioned a tube of uniform diameter, supposed to be an ornament, cut off at both ends and having a slit extending along two-thirds of its length.

Objects of Wood

A fine black finger-ring, similar to the rings made and worn by the natives in several islands of the West Indies, was found deep in the shell-heap. It is made from a seed of the gougou palm. An angular fragment of lignite of irregular form, with an artificial groove encircling it, was found in one of the deepest excavations.

Comparison of Prehistoric Objects from Trinidad with Those from Other Islands

As is generally the case in archeological studies, pottery, from its greater durability and variety in form, is one of the most reliable types of artifacts for the study of prehistoric culture areas in the West Indies. The Erin Bay shell-heap shares with the middens of other islands a predominance of earthenware with effigy forms and relief decoration, and the incised ornamentation of pottery vessels from this mound are strictly Antillean. When we compare these specimens with those from Porto Rico, we notice certain specialized features which are distinctive. In geometric designs the incised lines do not end in an enlargement, nor are their extremities accompanied by pits as is almost always true of pottery from Santo Domingo and Porto Rico. Comparatively few elongated heads of reptiles are found on pottery from Porto Rico, but such forms are common from the shell-heap at Erin bay. The heads from Porto Rico are mainly grotesquely human in form. As a rule the rims of the earthenware vessels from Porto Rico have approximately the same thickness as the vessels themselves, whereas in Trinidad they are often enlarged, or turned back, and are commonly ornamented with figures as in the pottery from Grenada and St Vincent.

While it has been necessary to make comparisons mainly from fragments, it is believed that the number of characteristic forms of pottery figures from this and from more northerly islands are sufficient to separate the two and to lead to the belief that the pottery from Trinidad is most closely allied to that of the Grenada area, as would be naturally suspected, and that it is only distantly related to that of the Greater Antilles.[1]

While the evidence is not decisive, it appears from the material available that the Trinidad pottery is nearer that of South America than to any of the northern islands of the West Indies. This fact may be explained by the situation of Trinidad, which lies within sight of South America, a fact that led to an interchange of cultures and peoples of the two localities.

[1] The author has many drawings of St Kitts pottery which shows still greater difference in form and ornamentation.

The nearest point in South America where excavations of shell-heaps have been made is the Pomeroon district,[1] British Guiana, whence we have a few specimens of pottery. None of these are so well made as those from the Erin shell-mound, and there are other indications that the ceramic art had reached a higher development in the islands than on the adjacent mainland.

Regarding the Pomeroon shell-heaps, im Thurn reached the following conclusions: (1) "That they were not made by resident inhabitants of the country, but by strangers; (2) that these strangers came from the sea, and not from farther inland, and (3) that these strangers were certain island Caribs, who afterward took tribal form in Guiana as the so-called Caribisi, or, as I have called them, true Caribs."

Attention has been called at the beginning of this paper to the fact that the Trinidad aborigines are not spoken of as Carib, and the archeological objects show no likeness to the work of this people, but rather to that of the Arawak, who were the great potters of the Orinoco.

The well-made pottery of Erin bay suggests an agricultural population rather than the nomadic Carib people, and the form of certain flat clay platters, or griddles, is not unlike those used by the Arawak in the preparation of meal for cassava cakes. The aborigines who made these objects were in a stage of culture similar to that of a people of the West Indies before the coming of the Carib in prehistoric times. Pottery making is more strictly a characteristic of meal eaters, and as the South American Arawak were well-known potters, we cannot go far afield if we ascribe the pottery from Trinidad to a kindred people. The nearest South American people to whom we would look for their kindred are the Guaranos, or Warrau, some of whom still inhabit the delta of the Orinoco, only a few miles across the Gulf of Paria, an inland sheet of water which separates Trinidad from the continent.

Although im Thurn identifies the builders of the Pomeroon shell-mounds as insular Carib, he gives some weight to the theory

[1] E. F. im Thurn, *Among the Indians of Guiana*, London, 1883. See also Rev. W. H. Brett, *The Indian Tribes of Guiana, Their Customs and Habits*, London, 1868.

that they were Warrau, which theory, however, he does not discuss and apparently does not accept. It seems to the author that the pottery found in the Tcip-tcip mounds indicates a culture higher than that of the Carib, and more advanced as art products than any thus far collected from the Warrau. He regards it as a localized or autochthonous development originally of South American origin, but belonging to the same great prehistoric insular culture found in the Antilles from South America to the Bahamas and Cuba. This culture had been submerged by the Carib in some of the smaller islands, but persisted into the historic epoch in the larger islands which Carib could not conquer.

The conclusion reached from a comparison of the objects from the Erin Bay midden is that while there is a general likeness in pottery from all the islands of the West Indies, there are special ceramic culture areas in different islands. It is also believed that the Carib had no extensive settlement in Trinidad, and that they came to the other islands long after agricultural people had developed on them, or were renegades from some of the islands where the uncertainty of crops drove them to become marauders on others.

BUREAU OF AMERICAN ETHNOLOGY
WASHINGTON, D. C.

A PIEBALD FAMILY OF WHITE AMERICANS

By ALBERT ERNEST JENKS

IN an American university is a member of an old-line American family now living in the Northwest and scattered over at least four states, which for three succeeding generations exhibits an unusual marking of the skin. I have examined and photographed piebald members of each of these three generations. My informant tells me of a piebald cousin of his father whom he well remembers, thus affording knowledge of piebaldism in four succeeding generations.

I shall not take time to describe the exact markings of the skin of the three persons shown in the accompanying illustrations; however, there are some important facts that should be noted. The light areas, or spots, are strikingly bilateral, with considerable symmetry; they occur with marked consistency at the more important joints of the body—as ankles, knees, hips, wrists, elbows, and shoulders. There is also a tendency to a median dorsal light line. This light dorsal area is the opposite of what Castle reports in his family of spotted negroes.[1] He found a dark dorsal area.

Family History

The American history of this family, so far as is now known to me, is as follows: The family is of Welsh and Scotch origin. Though no part of the family has had its American ancestry traced completely, the first man known in America bearing the common patronymic was living in New England in 1668. Members of this family believe that this New Englander is their original American ancestor.

My chief informant (number 7 in the genealogy chart, fig. 74) tells me that his father (number 1) was born in Ohio in 1813 and moved to southwestern Michigan when a youth. There he married

[1] Q. I. Simpson and W. E. Castle, A Family of Spotted Negroes, *American Naturalist*, Jan., 1913, pp. 50–56, ills.

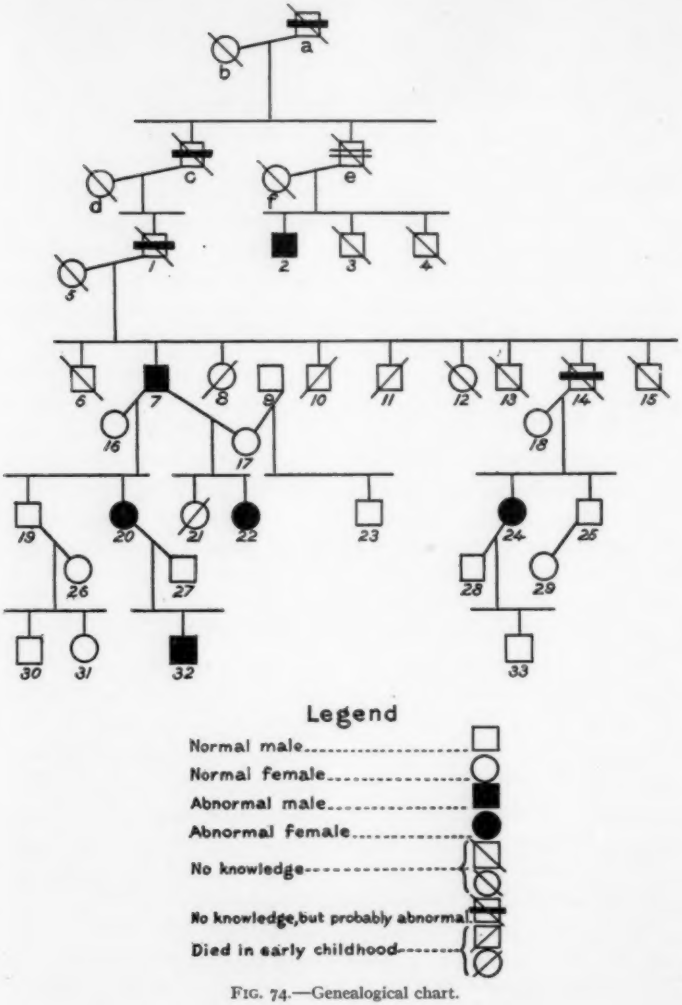


FIG. 74.—Genealogical chart.

a young woman whose family had also migrated from Ohio. Number 1 lived all his life on his farm in Michigan, became the father of two daughters and seven sons, and there at the age of fifty-one years died of lung fever—"what would now be called pneumonia."

The genealogy chart (fig. 74) shows that my chief informant is a piebald male. He well recalls his personal boyhood knowledge of a cousin of his father who was also spotted, and who lived near his father's home in Michigan. This person is number 2 in the genealogy chart. No descendant of number 1 has knowledge of any piebald members of the family other than those shown in the chart. No opportunity has been opened for study of the still existing Michigan branch of the family, though I have personal knowledge of some of its members whom I knew by name during my college days. I can vouch for said persons as above the average in education and moral fiber; one I recall well, even in facial features, who was a college trustee.

Individual History

A short individual history of the descendants of number 1 follows. First appears a list of persons in the first filial generation, though it is the second successive generation known to bear piebalds.

Number 6 was a male of unknown pigmentation, born in 1838, unmarried, who died of rheumatism at 55 years of age.

Number 7 is a pigmented male, born in 1840. He has married twice, and is the father of two children by each wife. Today he lives in Minnesota; he is my chief informant concerning the history of this family. He is shown in figure 75, and more facts about him will be presented later.

Number 8 was a female of unknown pigmentation, born in 1842, who died of unknown cause at 3 or 4 years of age.

Number 10 was a male of unknown pigmentation, born in 1845, who died of unknown cause at 3 or 4 years of age.

Number 11 was a male of unknown pigmentation, born in 1846 or 1847, who died of unknown cause at 4 or 5 years of age.

Number 12 was a female of unknown pigmentation, born in 1848, married but without children. She died of dropsy at about 25 years of age.

Number 13 was a male of unknown pigmentation, born in 1849, who died at 22 or 23 years of age in an asylum, after having suffered some time with epilepsy.

Number 14 is a male of unknown but probably abnormal pigmentation, born in 1850, and still living in Missouri. He has been afflicted with dropsy, but has completely recovered; now has excellent health and works all the time.

Number 15 was a male of unknown pigmentation, born in 1853; was not very strong and in consequence was given the lighter tasks about the farm, but he was never sick. At the age of about 30 he went to California and was for 8 or 10 years a successful collector there. He disappeared completely in 1892; all efforts of the family to trace him have been futile.

Two of the above described persons, numbers 7 and 14, have descendants. One of the two, number 7 and my chief historical informant, is shown in figure 75. By his first wife (normally pigmented, number 16) there are two children, numbers 19 and 20; number 20 is abnormally pigmented. By his second wife (normally pigmented, number 17) there were also two children, numbers 21 and 22; number 22 is abnormally pigmented.

The wife of number 14 (normally pigmented, number 18) has borne him two children, numbers 24 and 25; number 24 is abnormally pigmented.

The following descriptive list contains the second filial generation of number 1, and the third successive generation known to bear piebalds.

Number 19 is a normally pigmented male, born in 1862. He has a blond complexion, with brown hair and gray eyes. His health is excellent and he is a successful professional man. He is married, and his wife (normally pigmented, number 26) has borne him two children, numbers 30 and 31.

Number 20 is an abnormally pigmented female, born in 1871. She has a blond complexion, with brown hair and gray eyes. She has excellent health and is successfully engaged in public professional activity. She is widowed, and by her husband (normally pig-

ABNORMALLY PIGMENTED MALE (No. 32 OF THE CHART)

mented, number 27) is the mother of number 32, shown in accompanying plates XX and XXI.[1]

Number 22 is an abnormally pigmented female, born in 1894. She has a blond complexion, with brown hair and gray eyes. She has excellent health, is unmarried, and is a successful college student. The chief pigment spots of this subject are shown on the drawing in plate XXII. More facts will be presented later concerning her.

Number 24 is an abnormally pigmented female, born in 1882. She has a blond complexion, with brown hair and gray eyes. She has excellent health, is married, and by her husband (normally pigmented, number 28) has a son, number 33, born in 1908.

Number 25 is a normally pigmented male, born in 1884. He was married in 1912, has excellent health, and is a successful young man.

The following persons are members of the third filial generation of number 1, and the fourth successive generation known to bear piebalds.

Number 30 is a normally pigmented male, born in 1890. He has a rufous complexion, with light-brown hair and gray eyes. He is unmarried, has always had delicate health, and seems to be generally undervitalized.

Number 31 is a normally pigmented female, born in 1894. She has a blond complexion, with light-brown hair and gray eyes. She is unmarried, has excellent health, and is successful..

Number 32 is an abnormally pigmented male, born in 1892. He is a blond, with straw-colored hair and blue eyes. He is a successful university student in excellent health. He is shown in plates XX and XXI, and more facts concerning him will be presented later.

Number 33 is a normally pigmented male, born in 1908. He has a blond complexion, with light hair and blue eyes. His health has always been excellent.

Description of Piebald Individuals

Number 2 in the chart is the first such person of whom I have knowledge; and the only knowledge of him I now possess is that

[1] I am indebted to Dr Frary, of the School of Chemistry, University of Minnesota, for his photographic work in connection with the plates of persons shown herewith.

about 60 years ago he lived on a farm in southwestern Michigan and was "as spotted as a leopard"—as described by number 7. Concerning his two brothers (numbers 3 and 4) I have no knowledge other than that they once existed.

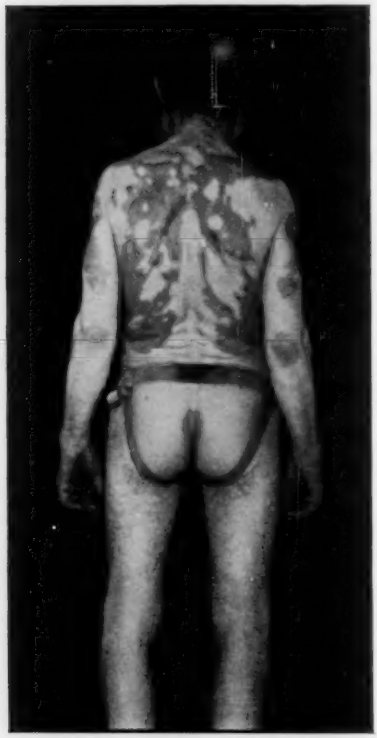
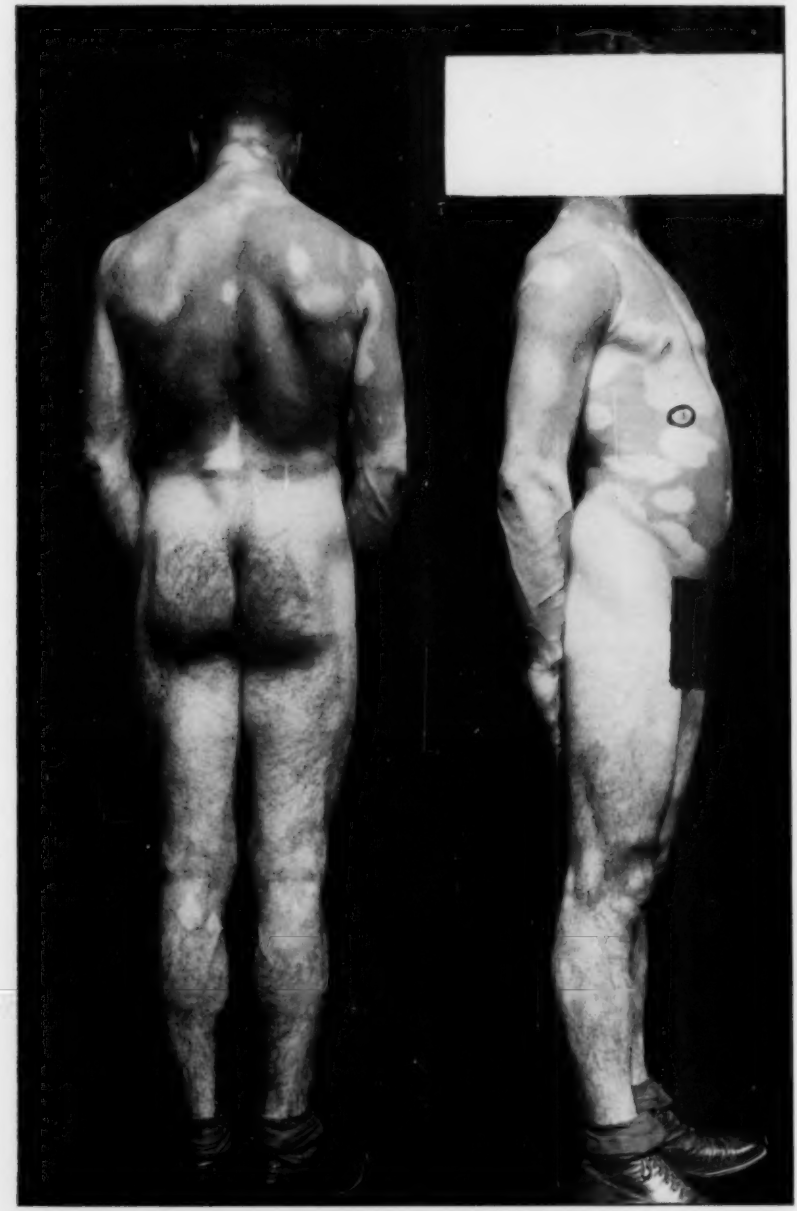


FIG. 75.—Rear view of pigmented male (No. 7 of the chart).

Our knowledge of number 7, shown as figure 75, is quite complete. And the facts disclosed by his descendants are as satisfactory as though one had been equipped to carry on breeding experiments with domestic animals. By his normally pigmented first wife, number 16, this man has two children. One of these, the son, number 19, is normally pigmented, and has two grown children, both of whom are normally pigmented. The other offspring of numbers 7 and 16 is number 20, an abnormally pigmented daughter. She is the mother of an abnormally pigmented son, number 32 (pl. XX and XXI) by a normally pigmented husband, number 27. By his normally pigmented second wife (number 17) this man (number 7) also has two children; one, number 21, died in infancy, the other is the abnormally pigmented young woman shown in plate XXII.

Additional interest is developed in the problem of the inheritance



ABNORMALLY PIGMENTED MALE (No 32 OF THE CHART)

of the character of abnormal pigmentation when it is known that female number 17, the normally pigmented second wife of number 7, has living today a twenty-two year old normally pigmented son (number 23) by a normally pigmented first husband (number 9).

The man, number 7, is a hard-working farmer in Minnesota whose health has been excellent during his 74 years, until recently when he was severely injured by a falling tree. His toil has been successful, so he has given a college education to the two children by his first wife, and his living daughter by his second wife is now a college student. He has the reputation in his home neighborhood of being a hard-working, "smart," very generous man, who knows more about general farming than most of his neighbors. He is keen and alert about personal and public matters, and the saving sense of humor runs through his philosophy of daily life. When I first consulted him in May, 1913, he regretted that unusual weather conditions had kept him for three days from reading the daily papers. This was a disappointment to him, as he was alive to the intricacies of the Balkan war and the daily developments in the national problem of tariff revision.

The abnormally pigmented young woman, number 22 (pl. XXII), is a college student in excellent health, whose physical development is above the average for her age. To substantiate

Gymnasium Records[1]

NUMBER 22		AVERAGE OF 392 GIRLS
Age (years)	18 $\frac{10}{12}$	19
Height standing	115.7 cm.	110.2 cm.
Height sitting	61.5 cm.	61.3 cm.
NUMBER 22		**AVERAGE OF 51 GIRLS**
Age (years)	18 $\frac{10}{12}$	19
Height standing	115.7 cm.	115.7 cm.
Chest expansion	3.8	2.5
Grip, arm, right	30.00	27.3
Grip, arm, left	26.00	24.7
Chest, depth	9.5	9.78
Lungs, capacity	181.00	150.6

[1] This young woman (number 22) was measured, and the other measurement records were furnished me by Dr Anna Norris, Director of Physical Education for Women, University of Minnesota. The illustration (pl. XXII) is introduced to show only the principal pigmented areas.

appearances I present her gymnasium record at the age of 18 years and 10 months, as compared with 392 Connecticut and Nebraska college girls at 19 years of age, so far as the first two measurements are concerned. For the other measurements number 22 is compared with 51 of the above girls who were of the same height, as well as the same age, as herself:

These records show that number 22 is physically very safely above the average, and the number whose average is taken is sufficiently large to make the results of scientific value.

Her scholarship record practically duplicates the average of her 106 classmates, and it improves with experience in college.

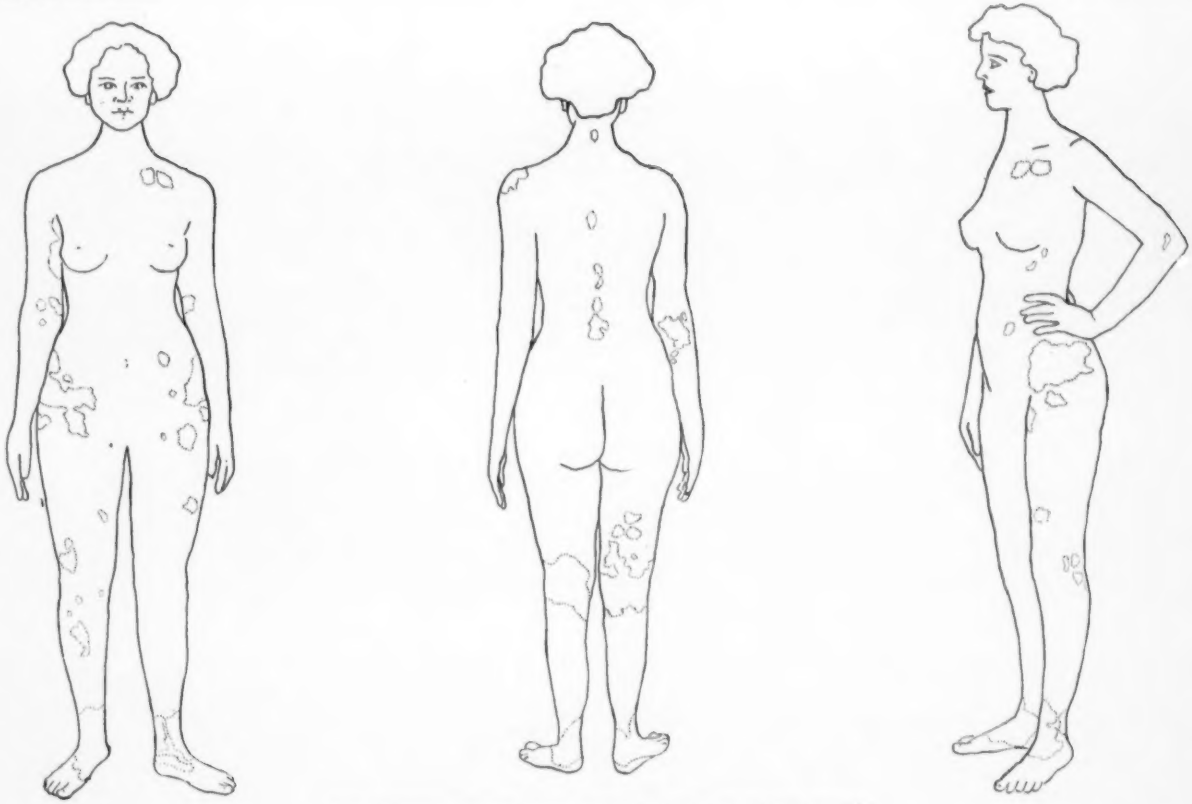
The young man (pls. XX and XXI) has a blaze face such as is seen in Castle's negroes and also in most of the piebalds shown in *A Monograph on Albinism in Man*.[1]

The blaze extends up to the crown of the head, where there is a small patch of white hair. White hairs occur also on the following parts of his body: both thighs in front, and slightly on the back of the left thigh; both shins in front; right side of pubic hair area, and entirely across immediately above the penis. There are no white hairs on pigmented skin areas, but there are many white skin areas producing only normally colored hairs.

The young man, number 32, has even a more favorable record in both the gymnasium and the class-room than the young woman:

Number 32 was far above the average when first measured—seen especially in his "total strength" of 772 points when a freshman as against 570.7 for the average of 1200 freshmen. This total strength has increased during the sixteen and one-half months which elapsed between the first and second measurements—advancing from 772 to 801. His heart action has also greatly improved. In his university a student's scholastic record is kept in terms of "excellent," "good," "pass," and "not pass." Since one's graduation

[1] Atlas, pt. 2, published by Karl Pearson, E. Nettleship, C. H. Usher, and B. C. Lamb, London, 1913. The first illustration published of Castle's piebald Negroes, so far as I have seen, is that of Sir Jonathan Hutchinson in an article entitled "On Palæogenetic Face-pattern in Acroteric Piebalds," pp. 1479–1481 of *The British Medical Journal*, vol. 1, June 18, 1910. This plate was again reproduced as plate W (picture 138), entitled "The Three Striped Graces," in *A Monograph on Albinism in Man*, atlas, pt. 1, London, 1911.



THE PRINCIPAL PIGMENT SPOTS ON A FEMALE (No. 22 OF THE CHART)

depends on his percentage of "goods," an *excellent* and a *pass* cancel each other and make two *goods*. The following records are given, therefore, with the *excellent* marks omitted.

Gymnasium Records of Number 32 and 1200 Other Freshmen[1]

	No. 32 Nov. 18, 1911	No. 32 Apr. 2, 1913	Aver Meas. of 1200 Freshmen
Girth, chest, depressed	34+	34.2	33.1
" " inflated	37+	36.8	36.2
" " normal	35.5+	35.8	34.7
Capacity, lungs	251−	249	257
Times, push up	12+	12	7
" pull up	7−	10	8
" sum	19	22	—
" weight kilos[2]	62.5+	63.9	61.9
Strength of arms "	119	140	—
" chest "	20+	17	12.8
" back "	165+	193	161
" legs "	375+	352	210
" right forearm "	49=	50	49
" left forearm "	44−	49	45
" total "	772+	801+	570.7
Pulse, before push up	90+	68	77
" after " "	130+	117	110

Scholastic Records of Number 32 and Other Students

One hundred freshmen and sophomores (both men and women) selected at random averaged:

Good	*Pass*	*Not Pass*
16/27	8/27	3/27

Whereas, for the same two years number 32 averaged:

Good	*Pass*	*Not Pass*
25/27	2/27	0/27

[1] All measurements in this table were made for me by Dr L. J. Cooke, Director of Physical Education for Men, University of Minnesota, and his assistant, Mr William Foster.

[2] One kilo equals 2.2046 lbs. Weight and strength are expressed in kilos except push up and pull up, which are expressed in number of times. Measurements are expressed in inches and tenths of inches. Lung capacity is expressed in cubic inches. Pulse rate is expressed in number of beats per minute before and after strength tests.

THE PRINCIPAL PIGMENT SPOTS ON A FEMALE (No. 22 OF THE CHART)

The average marks of women are higher than those of men, so his record is clearly much above the average for men—as it is even above the average for both men and women.

The men in his fraternity averaged the first semester of 1912–13 as follows:

Excellent	*Good*	*Pass*	*Not Pass*
$1\frac{5}{16}$	$1\frac{15}{16}$	$1\frac{3}{16}$	$\frac{0}{16}$

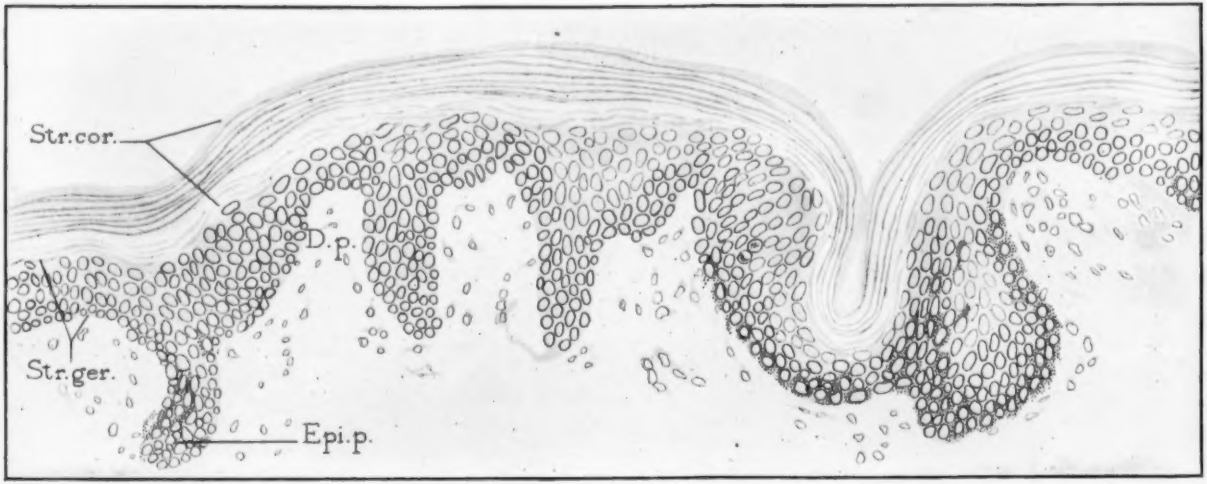
Whereas number 32 averaged for his first two years—

Excellent	*Good*	*Pass*	*Not Pass*
$1\frac{8}{16}$	$3\frac{4}{16}$	2	0

This record is considerably above the average of his fraternity fellows.

So, in spite of the rather unfavorable vital history of this family, the intimate facts presented about the three abnormally pigmented persons shown in the accompanying illustrations, and the facts known about the two other abnormally pigmented persons shown in the chart, present conclusive evidence that so far as those individuals are concerned the abnormal pigmentation does not appear to have weakened them physically, mentally, or morally (i. e., volitionally toward present-day ideals and conventional conduct).

When the genealogy chart is examined there seems no question about this statement that the character of abnormal pigmentation exhibited by persons numbers 32, 22, and 20 is hereditary; further, the character behaves like a simple Mendelian dominant; still further, it appears that these persons are heterozygous for this character of abnormal pigmentation. If this is true, then it is expected that number 1 (the father of number 7), and also males *c* and *e*, who are brothers, and who are fathers, respectively, of numbers 1 and 3, were also abnormally pigmented. So, also, the female *b* or the male *a* was probably abnormally pigmented; in the chart I have suggested that it was probably the male *a*. My reason for this will be made clear near the close of this paper.



DRAWING, UNDER LOW POWER, OF THE PORTION OF THE SECTION WHICH PASSES THROUGH THE BOUNDARY LINE BETWEEN THE LIGHT AND DARK AREAS OF SKIN FROM THE RIGHT SIDE OF No. 32 (PLATES XX AND XXI)

This character of abnormal pigmentation is not sex-limited, as is plainly seen by the fact that numbers 2, 7, and 32 are males, while numbers 20, 22, and 24 are females; also by the fact that male 32 inherits directly from his mother, number 20, while females 20 and 22 inherit directly from their father, number 7; while, again, male 7 must have inherited through the male for three antecedent generations to arrive at a common ancestor for the first two known abnormally pigmented persons, numbers 7 and 2.

Though this character of abnormal pigmentation is hereditary, the visible patent condition of skin spotting is not known to be congenital. These three persons illustrated here show what is scientifically known as "partial or imperfect albinism." I shall call it "progressive albinism."

That white hairs and light skin areas of person number 32, the member of the youngest generation known to be pigmented, are strictly albinistic is proved by microscopic examination. White hairs from the head of this man were examined and proved to be without pigmentation. Plates XXIII and XXIV present three drawings of the skin taken from the right side of the body of this man. The place from which the skin was taken is marked by the circle shown in plates XX and XXI.[1]

A piece of skin, including both light and dark areas, was fixed in a mixture of formalin, corrosive sublimate, and acetic acid immediately after excision. This was later imbedded in paraffin and cut into very thin sections. Some of these sections were stained and others were mounted without staining. The preservation of the epidermis proved to be perfect, and the pigment granules were well preserved in both the epidermis and corium. Both light and dark areas are included in the same section, thus greatly facilitating comparison of the two areas.[2]

Plate XXIII is a drawing, under low power, of the portion of the section which passes through the boundary line between the light

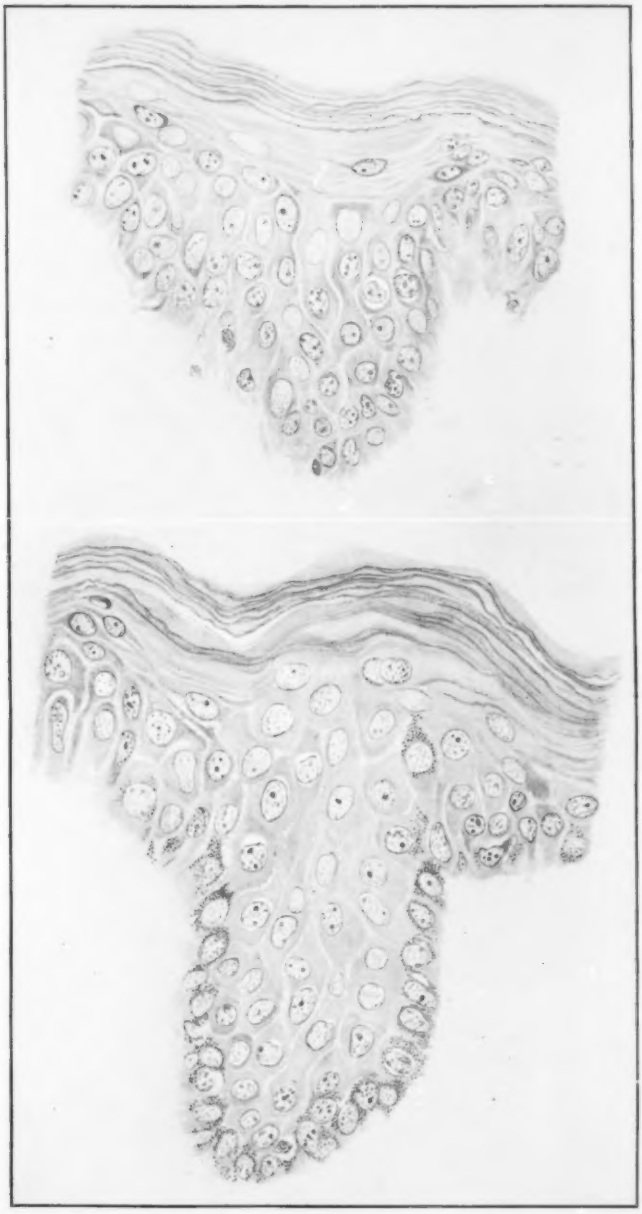
[1] The operation for the removal of this section of skin was performed by Dr Earl M. Hare, of the College of Medicine, University of Minnesota.

[2] Dr Hal Downey, of the Biological Department of the University of Minnesota, gave me unstinted time in the preparation and microscopic examination of the skin and hair of this man.

and dark areas. It shows the general structure of the skin and the distribution of the pigment granules in the section. *Str. cor.* is the stratum corneum; *Str. ger.* is the stratum germinativum; *Epi. p.* is an epidermal papilla; and *D. p.* is one of the papillæ of the connective tissue portion of the skin, the so-called dermis or corium. Plate XXIV reproduces two accurate drawings, under high power, of epidermal papillæ of the light non-pigmented area, and of the dark area, respectively.

In the living skin there is visible a sharp boundary line between the light and pigmented areas, as is well shown in plates XX and XXI, but in the microscopic sections such a sharp line is not so evident. In the section from which plate XXIII was made the first pigment granules appear in the epidermal process (*Epi. p.*) on the left of the figure. The figure shows that the pigmentation involves several cells of this papilla. In other sections examined the first pigment is not so abundant, and does not involve so many cells as in the one shown as plate XXII. This is especially true of those sections in which the first pigment granules appear in the basal cells of the epidermis which lines one of the furrows of the skin. In those cases only a few cells contain the granules, and those first granules are small and not numerous in any one cell.

The epithelium of the light areas, as is shown in plate XXIII, is absolutely devoid of pigmentation, but the corium contains an occasional irregular or branched pigment cell. As we approach the dark area the scattered pigment cells of the corium are seen to become more numerous, especially along the ducts of the sweat glands, but as yet no pigment is to be seen in the epithelium. Examination of several sections of the same piece of skin show that the pigment of the Malpighian layer appears first in the basal layer of cells of the epithelium lining one of the furrows of the skin, or in the basal cells of the epithelial processes between the dermal papillæ (pl. XXIII, *Epi. p.*). These first pigment granules are confined to groups of four or five cells in the above locations, the intervening cells being free from them. As we pass further into the dark area there is a gradual increase in the number of cells which contain pigment granules, and also in the amount of pigment within the



DRAWINGS, UNDER HIGH POWER, OF EPIDERMAL PAPILLÆ OF THE LIGHT NON-PIGMENTED AREA (UPPER), AND OF THE DARK AREA (LOWER)

individual cells. The cells which contain the granules are still confined to the grooves and epithelial processes, but the pigmentation gradually spreads to the sides of the epidermal papillæ and into the middle layers of cells of the stratum germinativum, where it is found in all but the two or three uppermost layers. However, this is not true of all of the epidermal papillæ of even the most highly pigmented region, as is seen from an examination of plate XXIV (upper) where most of the granules are in the basal layer. In papillæ of this type there are usually a few scattered cells above the basal layer which contain pigment granules. Three such cells are seen in the lower drawing of the same plate. In the region of greatest pigmentation the granules are not confined absolutely to the epidermal papillæ and stratum germinativum lining the furrows, but may be seen in a few of the cells covering the dermal (connective tissue) papillæ. In this location the granules are very small, and they are not numerous.

In general the pigment tends to collect in the basal layer of the epidermal processes and of the epithelium lining the grooves, but when it becomes very abundant it spreads to the upper layers and to that part of the epithelium which forms a covering to the connective tissue papillæ. All the granules are within the epithelial cells; none were seen between the cells.

The pigment granules may be found in all parts of the cell, but usually they are more abundant in the outer portion of the cell, toward the free surface of the skin (pl. XXIV, lower). If granules are present in the basal region of the cell they are usually smaller and less numerous than in the region of the outer pole.

In the light areas of the skin the irregular branched pigment cells of the corium (connective tissue portion of the skin) are very rare, but as these cells are not numerous in normal skin, the number seen here probably corresponds to the normal. In the pigmented areas their structure and location are the same as in the normal skin, but their increase in number is far beyond the normal. The epidermis of the dark areas contains a great deal more than the usual amount of pigment, but the general location and distribution of it are about the same as in the normal skin.

Careful study of the sections leads to the conclusion that there is nothing abnormal about this skin excepting the peculiar distribution of its pigment. There apparently is concentration of pigment in the dark areas with corresponding deficiency of it in the epidermis of the light areas, but its general form and distribution in the dark areas is normal. It is as though there was a repellent force in certain foci of the skin driving the pigment cells to other areas. The lack of pigment is the only feature which distinguishes the light area of the skin from the dark. The dermal papillæ and the epithelial processes between them are of the same general shape and size in both areas of the skin.

Without going further into details at this time, I may summarize the apparent positive results of this research so far in hand, as follows:

That in the family before us we see—

1. Hereditary spotting of the skin.

2. The character of spotting behaves as a simple Mendelian dominant.

3. The piebald persons are heterozygous for this character of spotting.

4. The condition of spotting is albinistic, and is progressive rather than fixed, giving progressive albinism—sometimes called dynamic leucosis.

It may be well to present here definitions of albinism in its three commonly recognized phases:

Complete albinism affords no visible pigment anywhere in *skin*, *hair*, or *eyes*.

Incomplete albinism affords visible pigment of various degrees of diffusion everywhere in *skin*, *hair*, and *eyes*.

Partial or imperfect albinism affords visible pigmentation limited to areas separated by unpigmented areas. This gives "piebald" and "spotted" cases.

Concerning the probable close interrelation between these various phases of unpigmented skin, Pearson says:

"When we consider the relative rareness of complete albinism, of the spotted or splashed condition and of xanthism, their relatively frequent coincidence in

the same stock suggests that these abnormal pigment conditions are not wholly independent, and that as a working hypothesis it is reasonable to suppose that complete albinism, partial albinism, incomplete albinism, and xanthism, all static forms of leucosis, are phases of the same process and are probably linked with leucoderma and possible other forms of dynamic leucosis. By 'linked' we suggest that they mark the complete, incomplete, local or progressive failure of the same metabolic process, which may never start at all, never start in certain areas, or be imperfectly started, and again being started may fail to maintain itself; further, that every variety of this failure may individually or collectively be associated with certain stocks, which may either show hereditary failure of one phase, of several, or exceptionally of all phases of pigment metabolism."[1]

Pigmentation is due to *pigment metabolism*. In "complete albinism" pigment metabolism completely fails to start. In "incomplete albinism" pigment metabolism occurs only incompletely. In "partial or imperfect albinism" pigment metabolism locally fails or never starts. In "progressive albinism," or dynamic leucosis, pigment metabolism, though having apparently once started at some time, fails in certain areas.

Some of the problems we are still working on in connection with this study are the following:

1. Whether the albinistic areas are more heavily haired than the pigmented areas, since complete albinos are frequently said to be more hairy than normally pigmented persons. Schwalbe says that the skin under heavily coated growths of hair is lighter in color than in less heavily coated areas. Max Weber, Rawitz, and Kuekenthal say, conversely, that the most heavily pigmented areas are denuded. If Weidenreick is right in saying that "we are accordingly justified to see in the hair a special organ for accumulating pigment of the cutaneous or epidermal pigment layer," then these albinistic areas will be found to be more heavily haired than the pigmented areas.

2. Whether the albinistic areas extend their borders after once having been known, or whether there is, instead, a progressive failure of pigment metabolism within a definite area.

[1] Anomalies of Pigmentation among Natives of Nyasaland; A Contribution to the Study of Albinism, by Dr Hugh Stannus Stannus, pp. 333–365 (quotation from pp. 361–362), *Biometrica*, Oct., 1913.

3. Whether an at-one-time albinistic area ever revives within itself the process of pigment metabolism.

4. The meaning of the median dorsal light area. Castle found a dark median dorsal area on the negro family he recorded. The dorsal area of most vertebrates is more heavily pigmented than adjoining areas; yet there is exception in the case of certain cattle with the white "line-back," and the frequent case of skunks with white patches along the dorsal line. I accept the theory so well outlined and defended by Weidenreick[1] that the function of cutaneous pigment in vertebrates is to throw off the penetrating light and to transform light rays into heat rays. Yet if this theory is true, what is the meaning of the consistently light median dorsal area in the persons illustrated herewith?

5. (In general.) The entire family, just so far as collaterals and descendants may be discovered, will be studied as completely as possible as a check on the work so far done.

The following pathologic description of the first man now known to have borne in America the patronymic of this spotted family in consideration, and who lived in New England in 1668, is worth preserving in this place. The description is found in a letter of a physician dated October 4, 1668, and copied by him on the fly-leaf of one of his medical books. I am indebted to the librarian of a New England college library for the corrected copy of this epistle, which follows. I present it with the suggestion that if more complete research proves, what members of this family believe, that this early New Englander is their family ancestor, his physical condition may have been the cause of the present hereditary skin spotting. It was because of this possible connection that I preferred to suggest in the genealogy chart that it was the male *a* instead of the female *b* who was probably abnormally pigmented.

"Deacon [George] Bartlett: I have been often sollicited to doe for ——— ——— [name given in original letter] in his sad condition, & have oft visited him & administered in time of his distemp: since his sores breaking out and

[1] Franz Weidenreick, Die Lokalisation des Pigmentes und ihre Bedeutung in Ontogenie und Phylogenie der Wirbeltiere, pp. 59–140 in Separat-Abdruck aus der *Zeitschrift für Morphologie und Anthropologie*, Stuttgart, 1912.

running I have seen them, used meanes to cleanse them & have from time to time informed them that he must have constant attendance, & be under a course of phisick if his life be saved, if meanes be not used he will live long in misery, if much meanes be used it is not for one man to beare the burden, neyther is one only called to shew mercy. I have not refused to attend him, but rather desyre some other, & I will be double my portion towards the expence. Whoever attends him, it will be double the charge to attend him in the place where he is, wherever comfortable dyet must be sutable to his weaknes & distress, & attendance added beyond w[t] his wife can doe. a society of Indians will ioyne helpfulnes to one of there owne in distress. he must take a course of phisick to Divert the currant of humors if one running sore be healed, the humors will have vent at another place, & p[r]ſently will be another swelling they say he is to weake to take phisick, but tis a stronger thing to dy then to take phisick, & if he becomes tenn times weaker, yet then he must take phisick or dy. these things I write to discharge myselfe, & let the loss of life & neglect of mercy ly at the right doore."

Subsequent research shows that the man in question died October 16, 1668, or twelve days after this descriptive letter was written.

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PETROGLYPHS OF ST VINCENT, BRITISH WEST INDIES

By THOMAS HUCKERBY

THE island of St Vincent was discovered on the 22d day of January, 1498. This being, according to the Spanish calendar, the day of St Vincent, the island was named in his honor. At that time it was inhabited by a large number of Indians. Dr Coke states that there were two distinct tribes, Red and Black Caribs.[1] There are many evidences of long prehistoric occupancy, of which the petroglyphs are among the most important.

Speaking of the West Indies, Dr J. Walter Fewkes states[2] that "not the least significant of the many survivals of a prehistoric race in the West Indies are rude pictures, cut in the rocks and called 'pictographs' or 'petroglyphs.' A study of their forms, geographical distribution, and meaning is an important aid to our knowledge of the origin and development of Antillean culture: it affords valuable data bearing on the migration of the race and points the way back to its ancestral continental home." The above statements do not too strongly set forth the position in relation to this important subject. Tribe may have succeeded tribe in the occupancy of these islands, but the petroglyphs have remained in the same position as they were when first chiseled by the prehistoric artist. Such is not necessarily the case, however, with the stone implements, earthenware utensils, and other artifacts which are constantly coming to hand, since it is certain that many of these were brought by the various tribes when they migrated to these islands from their original homes.

The full significance of the West Indian rock-carvings cannot be realized until all the examples known to exist in the various islands have been carefully photographed and compared with the examples found on the mainland. As a preliminary contribution toward the accomplishment of this desirable object, this short

[1] T. Coke, *History of the West Indies.*

[2] *Annual Report of Bureau of American Ethnology*, 1903–04.

A. PETROGLYPH, DEEPLY INCISED; BARROUALLIE, ST VINCENT

B. BOWLDER, DEEPLY INCISED; BARROUALLIE, ST VINCENT

article is written. At the present time we propose to deal exclusively with the petroglyphs of St Vincent. On some future occasion, should the opportunity be presented, we hope to be able to consider the other sections of this field. Probably there is not an island of greater interest than St Vincent to the student of the rock-carvings of the Antilles. It also may be said that throughout the West Indian archipelago there is nothing of greater archeological importance than the St Vincent petroglyphs.

For the purpose of the present article the petroglyphs now being considered may be classified under three heads: (1) Deeply incised, (2) shallow, and (3) cave. This classification is followed herein when individual examples are discussed.

The process by which the distinct types of petroglyphs were made must have been somewhat different. In all probability examples of the first and third classes were produced by means of a primitive chisel; the outlines of the shallow type may have been first scratched out and then finished by friction.[1] Im Thurn states that in British Guiana the deeply incised and shallow engravings are never found in the same district. In St Vincent, the areas in which they are found are separated by only a few miles. Nevertheless it is quite possible that they represent different periods and cultures.

Our notes may incidentally throw some light on the debatable question of the antiquity of the aboriginal occupancy of St Vincent. It is an accepted fact that Indians occupied this island under settled conditions long before the coming of Columbus. But how long? This is a question for which it seems impossible to find a definite answer. Judging from the appearance of the rock-engravings and the fact that the older figures had probably become effaced by the time the later incisions were made, it would seem that man found a home in this island much farther back in prehistoric times than is often supposed. Unfortunately it is not possible to estimate, with any degree of precision, how long a period would be required for the petroglyphs to have become obliterated by natural processes. It is probable that occupancy of the island gradually developed from occasional visits to settled and permanent residence.

[1] Everard F. im Thurn, *Among the Indians of Guiana*.

Another question of importance to the thoughtful student is, What tribe was responsible for these art remains? Generally it has been assumed that the petroglyphs date from the period of the Carib occupancy, but this theory should not be given undue weight. At the time of the discovery, the Carib women spoke a different language from that of the men, from which fact it has been conjectured that the males of the community represented the intruders, and the females the original inhabitants of the island, the supposition being that the Caribs had defeated the aborigines, exterminated the men, and taken the women as their wives. To account for the persistence of the two languages it has been said that the females were the slaves of the males and that there was very little actual association between the two. All this may be true, but it would not satisfactorily explain the existence of this condition over a long period. In process of time, and that not very prolonged, were the theory above mentioned tenable, the women would inevitably adopt the speech of the men. Hence it follows that the Carib invasion must have taken place not very long before the time of the discovery; and taking this fact into consideration, together with the almost certain antiquity of most of the petroglyphs, it seems unlikely that all the examples are the work of the Caribs. There may have been several prehistoric tribal migrations from various parts of the mainland. The large number of petroglyphs of one class suggests that the occupancy previous to the incoming of the Caribs extended over a considerable period. It is probable that most of the Antillean islands were peopled by one tribe before the Carib conquest, and the deeply incised figures may have been produced by them. The Petit Bordel petroglyph is the only one of the shallow type. We are of the opinion that this represents a much later period than the petroglyphs of the deeply incised class. If it is possible to ascribe any of the rock-carvings to the Caribs, it can reasonably be done in this case.

What these pictographs originally signified it would be impossible to say. We cannot imagine that they were produced simply to while away the time. The recurrence of particular figures (see the notes on Buccament Cave) indicates a definite intention. Prob-

A. PETROGLYPH, DEEPLY INCISED; RUTLAND VALE, ST VINCENT

B. PETROGLYPH, DEEPLY INCISED; INDIAN POINT, ST VINCENT

ably some of the petroglyphs had a religious significance. In every part of the world, at some time or other, one of the most common objects of worship has been a block of stone. In St Vincent it is a very common belief that such stones were used as sacrificial altars. This is not impossible. It is a well attested fact that the Indians of the time of the discovery were cannibals. When Columbus discovered Guadeloupe he found the huts of the natives strewn with human limbs and heads. Some of the petroglyphs may be crude attempts to depict the forms of dead chiefs whose spirits were worshipped and whose anger was appeased by the oblation of the blood of human sacrifice. Probably these were regarded as intermediary spirits through which they approached the supreme deities. All the petroglyphs may indicate centers of religious worship.

While many of the rock-carvings of St Vincent are of the deeply incised type, they do not show much resemblance except in the case of a few conventional heads. There is some similarity in type between the central figure of the one at Rutland Vale, Layou, and the larger engraving of the Indian Point petroglyph. The large figure of Yambou Pass Rock (fig. 77), so far as depth of incision is concerned, comes between the deeply incised type and the shallow engraving of Petit Bordel. With the exception of engravings of the Buccament Cave, they have all been incised in hard volcanic rock.

It is worthy of note that all the petroglyphs in St Vincent are found near the old sites of villages. We believe it to be a mere coincidence that many of them are found near rivers. Aboriginal man would naturally establish his home in close proximity to a supply of fresh water; and assuming that the petroglyphs indicate positions of importance, they would probably not have been placed far from the scene of his everyday life.

The petroglyphs of the first and third classes above mentioned are of the same type as those found in the other Antillean islands, and indicate the same culture, while the Petit Bordel petroglyph and the figures of the Buccament Cave point to a connection with the culture of the mainland. The Mexican culture, however, does not appear to have had any influence.

In conclusion we may say that in preparing the photographs from which the accompanying illustrations are prepared every effort has been made to give reliable representations of the actual petroglyphs. Where any doubt exists, it has been stated in the notes on the particular petroglyph under discussion.

Description of Plates

Plate XXV, *a*.—This engraved rock is found in the middle of the Glebe field and is situated about 200 yards to the left of the highway from Barrouallie to Kingstown. The slope of the bowlder faces westward. The incisions have a depth averaging about a quarter of an inch. Particular attention is called to the halo of thirteen rays. This figure may indicate a solar symbol. The basin-like depression immediately below the bottom of the engraving seems to be a natural formation.

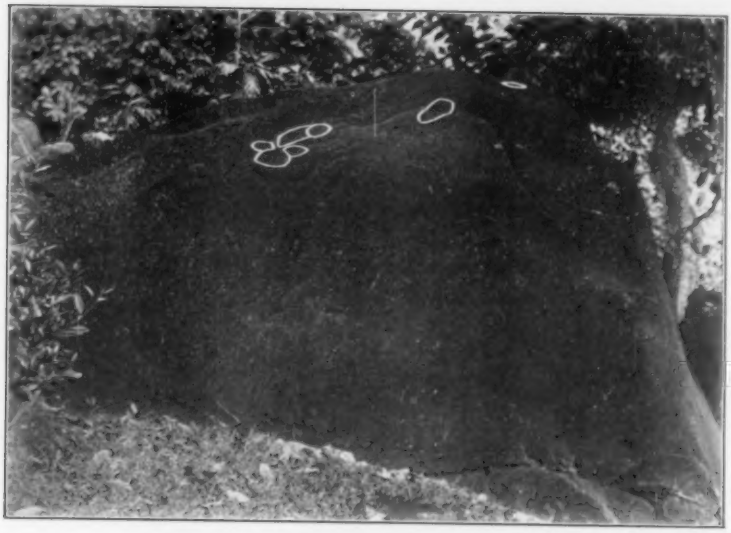
Plate XXV, *b*.—This rock lies about 300 yards from the petroglyph shown in Plate XXV, *a*. The hollow of the top seems to have been made by pounding, and the incisions used to sharpen pointed implements.

Plate XXVI, *a*.—This petroglyph is known to the natives of the island as "Jumbi Rock", or "Marked Stone", and is sometimes called the "Sacrificial Stone". It is situated about a mile up the Rutland Vale valley. The side of the stone on which the figures are seen has a southerly aspect. A very old man living in the valley probably correctly states that he remembers the time when the engraved surface was in a horizontal position. It will be seen from the illustration that the river washes the base of the stone. It may be that, some time in the past, the river slightly changed its course at this point and that what was originally the foundation of the southern side of this large rock was washed away. The oblique eyes of the central figure are unique. The cup-shaped cavities at the top of the lines, leading down to the two faces on the left, are considerably deeper than the parts of the engraving. There are indications of older figures on the face of the rock. A burial urn containing a skull and surrounded with other bones was discovered by the writer in this valley. A drawing of this engraved bowlder has been published by Karl Sapper in his paper on St Vincent, *Globus*, Bd. LXXXIV, Heft 24, Abb. 8, Dec. 24, 1903.

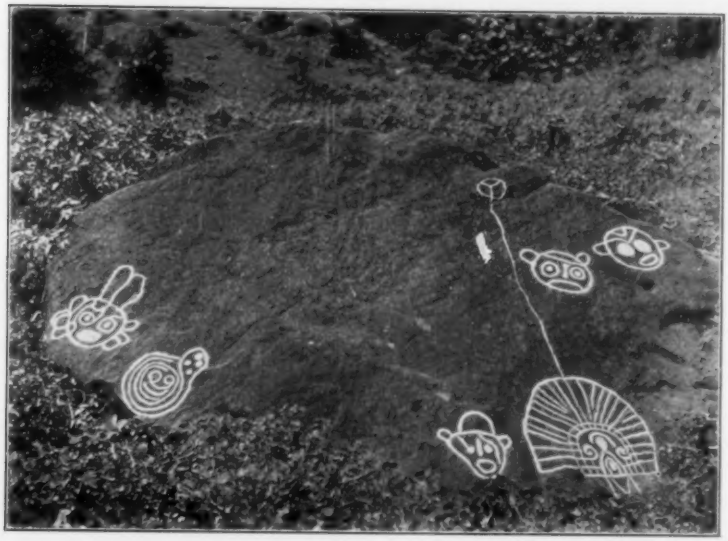
Plate XXVI, *b*.—This petroglyph is on the extreme point which lies between Indian bay and Villa bay. The rock faces south. The position of an uncertain line is indicated by the dots seen to the left of the engraving.

Plate XXVII, *a*.—This is the most recently discovered petroglyph in the island. It lies to the right of the highway from Kingstown to Lodge Village. A small stream flows past the base of the rock. The engraved surface faces westward.

Plate XXVII, *b*.—This engraved rock is found about 300 yards nearer to



A. PETROGLYPH, DEEPLY INCISED; LODGE VILLAGE, ST VINCENT



B. PETROGLYPH, DEEPLY INCISED; YAMBOU PASS, ST VINCENT

Escape Village than the one seen in Plate XXVIII, *a*. The large figure at the bottom is the most interesting; it is not so deeply cut as the other engravings, and the incisions have a comparatively fresh appearance. The representation of the snake is the only one found in the island. The face of the rock contains a fair number of undecipherable markings. Both the Yambou petroglyphs have the rising sun. Attention is called to the cup-shaped cavity below the head on the right. There is some similarity in the formation of the ears of the heads of this petroglyph to Porto Rican examples. Between the two petroglyphs found in this valley is a flat rock bearing a circle which encloses a cross (fig. 76).

FIG. 76.

FIG. 77.

FIG. 78.

FIG. 79.

PLATE XXVIII, *a*.—This petroglyph is situated in the Yambou pass, on the windward side of the island. It stands in the middle of a pasture, which is dotted with large volcanic bowlders. Probably the head on the left (fig. 77) originally had two projections. There is a faint line on the other side, and there are very faint indications of other marks on the central face (fig. 78), but they are not sufficiently clear to warrant their inclusion. On the back of the rock there is a face of a common type (fig. 79). The only indistinct line given is the one at the bottom of the monkey's body. During a previous visit we discovered traces of an original mark, but on this occasion we failed in our efforts to locate it. One of the heads is highly interesting: it appears to represent the head of a female; the hair is plaited, and the ear pendant seems to represent a peculiar kind of earring. Porto Rican petroglyphs have horned heads similar to some of the engravings in this example.

PLATE XXVIII, *b*.—This petroglyph is situated on the right of the Woods highway from Petit Bordel to Linley valley, and forms one of the boundary marks between the Petit Bordel and Rose Bank estates. The rock has an almost vertical front and faces the east. Most of the engravings are about half an inch wide and are very shallow. The bottom figures appear to be incomplete. Several horizontal lines are scratched across the lower part of it. It is not possible to say if these formed part of the original engraving; if they did, they probably indicate the process of operation. It may be that the figures were first outlined with a sharp implement and then finished by rubbing with wet sand. The three small figures at the top of the left-hand figure are not very distinct. There is a similarity between the engraving on the right and one of the St Kitts examples.

PLATE XXIX, *a*.—The cave in which these petroglyphs are found is on the left side of the Buccament valley, about 200 yards from the seacoast. It is cut out of the tuff agglomerate flow forming the ridge, which limits the extent of the valley

on the southern side. The cave is about 45 feet high and 30 feet wide, with a depth of at least 20 feet. The front opens into the valley. A large portion of the rear wall is covered with engravings. It was found exceedingly difficult to make a photograph giving a well-defined view of all the markings. Figures not included in the exposure are shown in figure 80, *a*, *b*, *c*, *d*, and figure 81. All

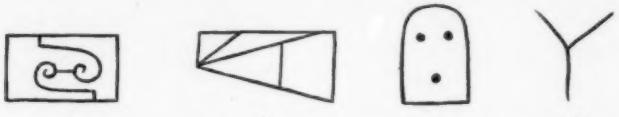


FIG. 80.

the engravings shown in figure 80 are cut in the rock which forms the shelf to the left of the cave. Figure 81 is scratched in the soft part of the tuff agglomerate and is situated a few feet above the shelf.

FIG. 81.

FIG. 82.

FIG. 83.

FIG. 84.

PLATE XXIX, *b*.—This photograph presents a view of the markings found at the entrance of the cave. Some time ago the land in the immediate vicinity was brought into cultivation. The burning of the soil revealed a large number of fragments of pottery and a few rubbing stones. These fragments do not manifest any variation from the other sherds found in different parts of the island. It may be interesting to note how one of the figures (fig. 82) seen on the right side of the photograph recurs time after time on the other petroglyphs. It is found at Safe Creek, Wyoming; Ojo de Benado, New Mexico; Ometepe, Nicaragua; and at Cachoeira de Ribeiro, Brazil. An earthenware stamp bearing this figure (fig. 83) has just come to hand from Carriacou. The character, with not quite the same curve, is represented at Chicagua Rapids, Venezuela. Another figure (fig. 84) with slight modifications is found on an engraved rock at San Esteban, Venezuela. Other figures of this petroglyph are found in various parts of South America, two of which (fig. 85) seem to be very common.

FIG. 85.

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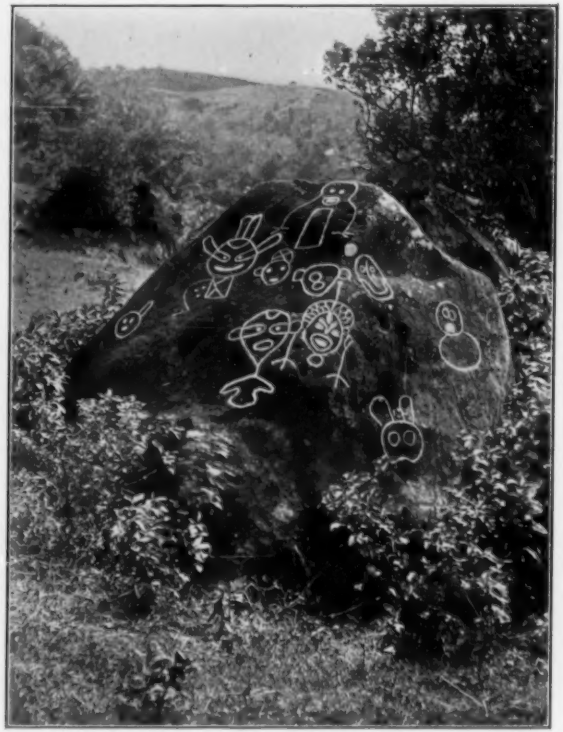

A. PETROGLYPH, DEEPLY INCISED; YAMBOU PASS, ST VINCENT

B. PETROGLYPH, SHALLOW ENGRAVING; PETIT BORDEL, ST VINCENT

A. PETROGLYPHS ON BACK OF WALL OF BUCCAMENT PICTURED CAVE, ST VINCENT

B. PETROGLYPHS AT ENTRANCE TO BUCCAMENT PICTURED CAVE, ST VINCENT

THE CHEYENNE MEDICINE LODGE

By GEORGE BIRD GRINNELL

THE ceremony of the Medicine Lodge, or Sun Dance, is one of the most important religious festivals known to the Plains Indians, although certain tribes living on and near the plains do not practise it, and so far as known never have done so.

The ceremony always has been misunderstood and has been generally condemned. Its form is constantly changing; in some tribes it is being called by a new name, and the old ritual and ceremonies are being forgotten. It seems time therefore that something should be said to correct erroneous views concerning it that have long had currency.

Of the acts which formerly took place during this ceremony, the most striking had to do with the personal suffering of some of those who were present, and generally it has been believed that a part of the ceremony of the Medicine Lodge was the infliction of the so-called torture frequently endured at the time and within the inclosure where the ceremony was conducted. A generation ago it was declared that this torture—swinging to the pole and dragging buffalo skulls—was self-inflicted for the purpose of making warriors, the implication being that no man might be considered a warrior who had not endured these sufferings. Other writers have said that the suffering was undergone by young men who wished to show that their hearts were strong; in other words, that it was a test of endurance. Something of this sort Catlin implies in his account of the Medicine Lodge ceremonies, known as *O-kee-pa*, among the Mandan. These beliefs many years ago led the Government to interfere with the Medicine Lodge. The Indian agents declared that the ceremony was a producer of warriors, while the missionaries, who held every form of religion wrong except the particular one professed by each, were repelled by the spectacle of the suffering, and both agreed that the ceremony ought to be stopped. So the Indian Bureau forbade the Sun Dance in many places.

The Indian agents and the missionaries were not alone in believing the torture to be a part of the Medicine Lodge. Some ethnologists have had the same impression. In his recent interesting *Handbook of the North American Indians of the Plains*, Dr Wissler says: "The Sun Dance presents several features variously combined and distributed. These are the torture, the circular shelter of poles, the use of a sacred bundle, the erection of a sun pole, and the dancing ceremonies."

In his article on "Ceremony" in the *Handbook of American Indians*, Dr G. A. Dorsey says that the self-inflicted torture "often forms an intrinsic part of the public performance." This is a general statement, with no specific reference to the Medicine Lodge ceremony.

On the occasion of a Medicine Lodge ceremony a dozen or fifteen years ago it was reported that two students of ethnology hired a young Indian to have his back pierced and to drag about one or more beef skulls. I do not know that this ever took place, but at the time it was widely heralded and was used as an argument for stopping the dance. If this happened, the boy, like those who hired him, may have believed that he was going through a part of the Medicine Lodge ceremony, but older men would have set them right, and explained the true motive of this more or less painful proceeding.

Persons who have been much among Indians recognize the extraordinary difficulty often found in getting at the fundamental motive which lies behind any act. They recognize also the almost universal tendency among observers to credit the primitive people whom they see with the same motives and the same methods of reasoning that the observers themselves employ. Since in old times torture in some form or other often took place during and at the ceremony of the Medicine Lodge, it was natural enough that observers should take it for granted that this torture was a part of the ceremony. This was not true in the case of the Cheyenne Indians, nor, in my belief, was it ever true in the case of any plains people. The suffering of the Medicine Lodge was not for the purpose of making warriors or to show endurance, nor was it any part of the ceremony. Instead, it was, in all cases, the payment by the individual of some vow

that he had made; was a sacrifice of self to bring good fortune or to avert misfortune in the future, or else was the carrying out of some instruction received in a dream. Sometimes the motive was merely loyalty to a friend—a wish to share his suffering.

The sacrifice of the body is, I suppose, as old as religion and is confined to no sect, creed, or race. It has been universally practised as a means of invoking the favor of the powers which rule the universe. Primitive people practise it in all lands. Civilized people do the same today. The priests of Baal, when they called on their God to send down fire from Heaven to consume the sacrifice of Elijah, cut themselves with knives as they prayed to him. The Indians swing to the pole. The flagellants lashed themselves with whips, and the so-called Penitentes in the Southwest with the branches of the cactus, and endured the sufferings of crucifixion. The monk of the Middle Ages wore a hair shirt, and the woman of today fasts during Lent. All these are different expressions of the same feeling.

The ceremonial of the Medicine Lodge is a religious occasion of great importance, transmitted, the people say, through many generations. It celebrates the rebirth of life on the earth, the return of the season of growth. The Cheyenne call it "the renewing of the earth." The occasion, the time, and the place are sacred, and the ceremony is associated with certain sacrifices, the offering to the spiritual powers of acceptable gifts, accompanied by the purification which comes from the abstention from food and drink for a period of a few days.

The mysterious powers are present and receive the prayers, offerings, and sacrifices, and the occasion is one peculiarly favorable for the performance of those acts in which spiritual assistance is needed. The edifice, so called, of the Medicine Lodge is the center of these helpful influences, but they affect the whole gathering. All who are present in the camp receive a blessing in some degree. For this reason, in old times, every member of the tribe wished and was expected to be present. Messengers were sent about to every small camp to notify it of the time of the ceremony. If, as rarely happened, some man was slow in coming to the meeting place, a

band of soldiers was sent to bring him in. If he was obstinate and still delayed his coming, he was fetched by force, and harsh measures might be employed to hasten his arrival. He might be beaten with quirts, his lodge and lodge-poles destroyed, and even his horses killed.

The reason for this enforced attendance is obvious enough. Absence from the ceremony was believed to bring misfortune, and misfortunate to an individual, or to a number of individuals, might well enough extend from them to other members of the tribe. Therefore, in the belief of all the people it was essential that everyone should be present to share in the blessed influence of the occasion and in the protection from evil which this influence would bring.

I have no record of any family or group of Cheyenne refusing to attend this ceremony, though it is stated that on one or two occasions the messengers have been unable to find some little camp at a distance from the principal village. I know of no case like that instanced in an earlier paper on the Cheyenne, where Big Ribs, a famous warrior—whose name is always coupled with that of Old Little Wolf, as the two bravest men ever known among the Cheyenne—resisted and drove away a group of soldiers sent to his camp to bring him to the ceremony of renewing the medicine arrows.[1]

Because of the presence of these favorable spirits at the ceremony, and their beneficent influence, all the food brought into the Medicine Lodge and allowed to remain there for a brief period is sanctified. Having passed through this sacred place, it is all—or almost all—taken out again and eaten by the people, not as food merely, but also for the spiritual benefit received by eating it. This belief is so firmly held that an effort is made to have everyone in the camp, from the youngest to the oldest, share in these benefits by eating of the food. A relative, for example, will take a tiny morsel of such food and will place it in the mouth of a babe too young to swallow, removing it a moment or two later, but believing that the blessing received by the food while in the Medicine Lodge will be imparted to the infant.

Among the Blackfeet a similar faith and like practice exist.

[1] *American Anthropologist*, N. S., vol. XII, p. 547.

The hundred tongues dried and prepared by the woman who vows the Medicine Lodge in that tribe are partaken of by all the people as a sacred food, the eating of which carries with it a blessing.

The sacred influence of the Medicine Lodge extends through the entire camp and lasts during the whole time of the ceremony. Any spiritual and sacred operations in which prayers are used will be more successful if undertaken or carried on at this time than if undertaken at any other time. As said of the ceremony of renewing the medicine arrows, secret medicines mixed and prepared during the days of the Medicine Lodge will be more potent than those made at other times. The making of shields—a mysterious and secret operation in which spiritual influences played a most important part—was undertaken at this time. The spiritual protective power of shields made at that time was strong. Generally this was a peculiarly favorable time for the performance of any operation in which prayers—the invoking of help from the mysterious powers—were important. In the same way it was a good time to pay vows.

A man out on the warpath and in danger might pledge himself to swing to the pole, or drag skulls, without specifying when he would do this, and in that case the time at which he would pay the vow was for him to determine, or he might vow that he would swing to the sun-dance pole, or would drag skulls during the ceremony of the Medicine Lodge. In the same way a man might pledge himself to make a feast for the horse doctors' society—horsemen—if his horse did not give out in the fight, or might promise to offer other sacrifices if successful in certain undertakings.

If no Medicine Lodge ceremony was held for two or three years after he had made the vow, the man who had promised to undergo the ordeal at the time of the Medicine Lodge postponed the payment of the vow until that ceremony was held. On the other hand, one who had promised that he would swing to the pole usually did so absolutely alone, except for the assistance of one or two men who in the past had themselves suffered in this way and whom he was obliged to ask to teach him how to perform the act in the ritual manner. He was altogether likely to make his sacrifice quietly,

among the hills at a distance from the camp, seeking no notoriety, but rather striving, so far as possible, to keep the matter quiet. He might drag buffalo skulls in the same way. Such individual sacrifices have been offered within two or three years.

Of late years, since the Government interfered with the operations of swinging to the pole or dragging skulls, and since the whole mode of life of the Indians has changed, the common form of public sacrifice in the Medicine Lodge is dancing without food or drink for three or four days, an effort which, among the modern young Indian men, often wholly unaccustomed to exercise, has led to many a physical breakdown. The dancing of old times, while gazing at the sun or the moon, even though very protracted, was more likely to bring on visions and dreams than to cause physical exhaustion.

Formerly, I am told, it was much more common for young men to go out in the hills, have their breasts pierced, and under instruction to walk back and forth for a long time in a limited circle, trying to break away from the pole, than it was for young men to endure this suffering in the Medicine Lodge. Not a few other forms of personal suffering which had no possible relation to any general religious festival were undergone to obtain the favor of the powers. One of these was to starve for a long period; another was to stand all night in water up to the shoulders.

The following detail of the operation of swinging to the pole alone in the hills was given me by *Wĭh'ĭokĭs*, Little White Man, formerly called *Wĭkĭsĭnĭs'to*, Bird That Calls (utters a cry).

He was then a young man, and his first child, a little baby, was very sick. In order to save the infant's life he determined to make a sacrifice. While considering what form this sacrifice should take, he saw in dreams persons standing up and swinging to the pole, and when at length he was convinced that this was what he was directed to do, he still hesitated for some time before making up his mind to act. Yet he kept thinking he saw a person swinging to a pole, and even when awake and moving about he used to see this. Finally another dream led him to decide. The person who appeared to him in the dream said to him that if he made this sacrifice his child would recover.

Bird That Calls now summoned two older men to advise him. These were Black Whetstone (*Mōhktā'vēhūtsē'hē*) and Wounded Eye (*Hē'ēkāi'ĭtstāhē*). He told them what he had seen, and said that he was obliged to undergo this suffering and that they must teach him how to do it. He offered them the pipe, requesting them to help him, and they accepted it, thus promising their assistance.

The afternoon before the sacrifice was to be made, Black Whetstone and Wounded Eye took Little White Man out to cut the pole to which he was to be tied. When a young cottonwood tree, suitable for a pole, was found, they grasped his arms and caused him to move his hands four times toward the tree, as if cutting it with an axe. Then he cut down the pole without further ceremony.

They now caused him to pick it up from the ground, making four motions before lifting it and then four motions before dragging it away to the place chosen for the sacrifice. When the place was reached, the instructors showed him how to dig the hole in which it was to stand, making four preliminary motions before actually beginning to dig the hole. The pole was not trimmed; the leaves and branches were left on it.

That night after the three had reached camp, a messenger was sent about the camp to find and borrow two braided rawhide riatas. Two were required because he had two instructors. If there had been a single instructor, only one rope would have been needed. Next morning the three men arose very early, and long before daylight each instructor took one of the ropes and rubbed his hands down over its whole length four times. Then a coal was taken from the fire, sweet grass sprinkled on it and each rope was passed four times through the smoke. Then to one end of each rope were tied two deerskin strings, each seven or eight inches long. Each rope was now doubled into a ball in the middle, leaving the end to which the strings were tied—to be attached to the skewers in his body—four or five feet long, and the other end—to be tied to the pole—somewhat longer. The ropes were now put aside, and thereafter no one might touch them except Bird That Calls.

Just before daylight the instructors painted him with white clay

over the whole body. After he had been painted, they caused him to sit, and filled and lighted a pipe, and offered it to him four times, and each time he smoked. The pipe was held to his mouth; he did not touch it with his hands.

After he had smoked, the instructors told him that the direction to perform this sacrifice was the greatest favor that he could have received—the privilege to stand on a hill where all (the powers) might look at him, and to stand by a pole in the sun's road where the sun could look down and see him. It might be a hard trial, but he must not give up. When the sun rose he should look at it until it reached the middle,—the zenith,—and when it passed the middle he should not give up, but should watch it until it disappeared.

After he had received this instruction, he set out with the two older men to go to the place where the pole was. He had expected to walk out there barefoot, but it chanced that among his gifts to his instructors were some moccasins, and for this reason he had the right to wear moccasins in going out. When they set out, he walked in advance, wrapped in a buffalo robe and carrying the two ropes. The instructors followed.

When they reached the place where the pole was, Bird That Calls sat down near the pole and facing it, and the instructors sat behind him and filled a pipe. Before lighting the pipe they pointed it to the four directions and prayed. They smoked and waited before setting up the pole until the sun just began to peep over the hills. While waiting the two instructors tied the two ropes to the pole, each one giving the other a small present to pay him for tying the rope.

The instructors said to him, "You must watch the sun, and before it gets up too high must raise the pole."

When the sun began to rise above the horizon, Bird That Calls planted the pole, while the instructors prayed and asked the sun to look upon this pole. "Whoever it was that directed this man to do this, let him see that now he is doing it. Let this man have good luck, and let all his children be fortunate. We have the tree standing in your gristle rope. It has never been

broken. Let this man live long—until he has crossed the four ridges."

The four ridges alluded to represent four trials—four sacrifices to be made. It is believed that the great power will be pleased with a man who shall perform four important ceremonies. These ceremonies are the ridges referred to. One who desires to obtain special favor from the great power has these four ridges to cross; in other words, he endeavors to perform these four difficult ceremonies during his life. There is no regular order in which the four ridges are to be crossed, nor is it believed that the four ceremonies are always the same ones. A man who has made the Medicine Lodge—passing through all its mysteries—is considered to have crossed one of the four ridges. One who wishes to acquire abundant spiritual power—to qualify as a great medicine-man—may do so by passing one of the ridges each year for four years. The opinion has been expressed that a man who possessed sufficient physical endurance to stand the hardships involved in the tasks, might pass all these ridges in a single summer. The crossing of a ridge, it is believed, does not imply any particular period of time.

The braided gristle (rawhide) ropes spoken of in the prayer were commonly used to swing on by those who paid their vows in this way in the Medicine Lodge. Such ropes were used over and over again by different persons in the payment of such vows. The tree stands within the rope that is tied about it.

South of the pole, and facing southward, was placed a buffalo skull; on each side of the pole, east and west, stood two buffalo chips, each four steps and a half step (12 or 14 feet), from it, and south of each of these chips was another. These chips represented guards, or watchers, to observe the man and see that he did his duty. Buffalo chips were not always available, but if they were not to be had, large stones might be used in place of them. In the arc of a circle south of the pole—the pole being the circle's center—was spread a bed of white sage for him to walk on.

It was now time for him to be pierced. He knelt, sitting back on his heels, and rested his hands on his knees, opposite to and facing the pole. The instructors knelt at his right side and with

charcoal marked upright parallel lines on the skin on the right breast to indicate where the knife should enter and where come out. Then one instructor took the skin in his fingers above the marks and the other below the marks, and pinching up the skin they thrust in the knife at the marked place on the right, and it came through at the marked place on the other side. Before using the knife, it had been rubbed down with a piece of charcoal. The left breast was pierced in the same way, the instructors passing behind the novice, but in this case the knife was thrust into the skin of the left breast from right to left, as it had been on the right side, and not from left to right. This was done because a single knife was used for the two piercings. If two knives had been used, the second might have been inserted from left to right.

When the right breast was pierced, the instructors, assisting each other, passed a small straight stick, the length of a finger, through the slit, and to this skewer tied the strings on one of the ropes. After the left breast was pierced a similar skewer was passed through that slit and tied.

After the strings had been tied, the instructors raised Bird That Calls to his feet and supported and directed him as he walked over to the middle of the sage-covered path. Then the instructors pulled four times on his breast to straighten out the ropes. They moved his body toward the east and then toward the west; again toward the east and again toward the west—four times. Then they took hold of his right leg and moved it four times forward, and at the fourth movement he began to walk to the west end of the sage-covered trail, and from there back to its east end, and back again—going forth and back until the sun had set. It seemed to him to take the sun a long time to reach the middle, but the time from the middle to the sun's setting was much longer. He was constantly trying to break loose, but the skin of his breast did not break; it only stretched. He had the privilege of resting four times —in the middle of the forenoon, at noon, in the middle of the afternoon, and just before sunset. At each of these rests he might smoke a pipe. He rested but once—at midday.

As soon as he had begun to walk, the instructors left him and were

absent all day, intending to return to him just as the sun set. When they left him, they said, "When we return for you at sunset, try to be as near as you can to the place from which we raised you up, but do not sit down until we come to you and push you down."

During the day the instructors built a sweat-house in the camp.

At sundown, when the instructors reached him again, they grasped his arms, one on each side, and pushed him down to a sitting position. They cut through the stretched hide of his breast, took him back to camp, and entered the sweat-lodge with him, some other men who had made this sacrifice also going into it. His wounds and the blood on his body were wiped off with white sage. That night, when he ate, no one might eat with him except men who had experienced this suffering. On each of the three following days he took a sweat, and on the fourth day the ceremony was finished.

He was told that thereafter, if he wished to teach men how to undergo this penance, he might teach four persons and no more.

In taking a ceremonial sweat, the man is thought for the time being to give over his whole body and spirit to the great power. Then when he leaves the sweat-house, and his body has been wiped off with white sage—the male sagebrush (*hētănēwănūtz'*)—his body again belongs to himself.

Wĭk'ĭsĭnĭs'to gave his instructors a horse, a gun, a suit of deer-skin clothing, moccasins, and blankets. His child got better the next morning.

An explanation of the considerable number of dancers who take part in the sacrifice and go through the labor and starvation at the time of the Medicine Lodge, is found in the feeling of loyalty which exists in the soldier societies. When a member of any soldier society had pledged himself to suffer at the Medicine Lodge, whether as medicine-lodge maker, or merely as a dancer, it became a point of pride with the other members of that soldier society to undertake to carry through a similar sacrifice. They felt that they must not let their brother undergo this suffering alone, and so, out of good will and friendship for him, they undertook to do as he was doing.

That the so-called torture is no part of the ceremony of the Medicine Lodge I have long known. Recently, in order to confirm

this knowledge, I made specific inquiry on the point of certain priests—men who themselves have made the medicine lodge and who time and again have acted as priests in the Medicine Lodge ceremony. I asked them to tell me definitely whether the torture —the dancing for a long period, the swinging to the pole, or the dragging of skulls—were parts of the Medicine Lodge ceremony. They seemed astonished at the question and rather disposed to think I was joking with them and to laugh at the inquiry; but when I explained my reasons for asking it, each man earnestly and positively declared that the torture had no relation whatever to the ceremony.

These forms of suffering have appealed to the imagination of people who have witnessed them, and the result has been that in the popular view the actual ceremony of the Medicine Lodge and its purpose have been very largely overlooked, while the spectacular performances of the so-called torture have been enlarged on.

The use of sacred bundles, the erection of the sun pole, the building of an altar, some sacrifices, and certain other more or less secret ceremonies are parts of the ritual of the Medicine Lodge, as they are of certain other ceremonies. Torture is no part of it and has no relation to it in any tribes with which I am familiar.

The Medicine Lodge seems only a form of the Summer Dance common to many Indian tribes, and is directly connected with the food supply—an abundance of animals, a liberal yield of natural fruits and roots, and of crops cultivated. These festivals are direct prayers for sustenance—petitions that the earth will continue to bring forth food for man and for the beasts on which man depends for food.

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TEN DAYS WITH DR HENRI MARTIN AT LA QUINA

By CHARLES PEABODY

FROM September 17 to September 28, 1913, it was the writer's good fortune to be the guest of Dr Henri Martin at his country place near the Mousterian station of La Quina.

Geographically and topographically the site may be thus described: It is about three kilometers northeast of Villebois-Lavalette, itself a cheerful little village on a secondary railway, about 30 kilometers southeast of Angoulême; its latitude is about 45°, 30′ N., and its longitude 0°, 20′ E. from Greenwich. The department is Charente, midway between the famous Dordogne to the southeast and the ocean to the west. The altitude is but few meters above the sea, while the banks of the Voultron, on which La Quina is, rise from 20 to 60 meters more; farther away are heights of 180 or 190 meters. A limestone country, the valleys are likely to be long and bounded by the precipitous eroded cliffs ready prepared by nature for the protection of prehistoric man. The heights themselves are ridges, but not monotonous; the relief is much like that of the Ozark region of our country, without the great extent of plateau characteristic of the latter. The country is fertile, though the highlands have been largely denuded; nut-trees of various kinds and glorious poplars made a late September a revel of color and form.

The climate is warm for the latitude, temperate in winter and tempered by the sea in summer. The prevailing west winds carry in some moisture, but the sea as a whole does not modify the sensible temperature as much as one would expect. Health is the rule, and its concomitants, independence and good nature. The most important industry is the making of brandy, Cognac, the center of the industry, being in Charente, only a few kilometers to the west.

In prehistoric archeology, especially of the paleolithic period, Charente is rich. Overshadowed by the amazing plethora of

Mousterian, Aurignacian, Solutrian, and Magdalenian from the Dordogne, this department is less well known. The Charente river follows its own independent course to the sea, unconnected with the Vézère-Dordogne system, and the country is lower and seems to contain fewer inhabited rock-shelters.

With the enthusiasm of the Frenchman everywhere for his local archeology, which we should do well to imitate, the Charentais have done much in their section. The work of Favraud and Chauvet should of course be mentioned.

Seven or eight years ago Dr Henri Martin, of Paris, realizing the importance of the rock-shelter at La Quina, bought the station and has wisely kept it from depredation by the unwary and from desecration by the unscientific. For years, summer after summer, he has excavated, almost with Professor Putnam's proverbial tooth-brush, this great shelter 40 or more meters long and eight or nine meters high. Seldom using more than three workmen, and these for the purpose of carting away débris, he picks away at the breccia, aided by Madame Martin and his three enthusiastic children. He uses *piochets* and *crochets* of his own invention, and, when the breccia becomes too hard, sends son Bernhard to the Voultron for a pail of water to soften the indurated conglomerate by an ordinary squirt.

The early mornings Dr Martin spends in his delightful laboratory in the picturesque "logis," where he lives. Individual, microscopic, comparative examination, meticulous classification, complete preservation, and generous distribution are his methods. The museums at Phillips Academy, Andover; Harvard University; Yale University; Columbia University; The American Museum of Natural History, New York; The University of Pennsylvania; The Smithsonian Institution, and the University of Chicago bear witness to his liberality. It may be frankly said, without probable indiscretion, that all he asks is scientific care, record, and exhibition. An exchange is always welcome to him, especially in somatological material, in primis, crania. But any responsible institution with a dignified place of exhibition and competent curatorship seems fairly able to procure a series of La Quina specimens. What the Doctor will not do is to sell.

Excavation at La Quina, the richest under-surface station the writer has seen, is a privilege. To his knowledge but one other foreigner has been invited to excavate; this is Baron Blanc, an Italian with a chateau-residence in Chambéry.

The threatened disqualification of foreign excavators has not yet taken place (*absit omen*); Dr Martin, however, advises careful dating of La Quina specimens. All specimens at present in America, so far as knowledge goes, have been received by gift or exchange direct from Dr Martin or, by his own request or authority, from one or two of his intimate friends. Any other should justify their provenance.

La Quina has been published in extenso. This is not the place for a bibliography; it is not necessary. Reference to the standard earlier and later digests of the de Mortillets, to the first volume of Déchelette's *Manuel*, to the series of articles on the Mousterian of Le Moustier by Bourlon, and chiefly to the work of Dr Henri Martin himself and comments thereon in *L'Anthropologie*, *Bulletins et Mémoires de l'École d'Anthropologie de Paris*, *La Révue Préhistorique*, *L'Homme Préhistorique*, *Bulletin de la Société Préhistorique Française*, and the *Comptes-Rendus des Congrès Préhistoriques de France*—this will orientate him who wills.

Of course, the local pride of the Charentais leads them to differentiate rather more than is necessary between the industry of one department and that of another; departmental divisions are quite conventional, and changes in types of specimens come gradually rather than by jumps over frontiers. The Mousterian of La Quina is surprisingly homogeneous from the lowest stratum to the highest. From the former a few recollections of the Acheulian have been reported, and suggestions of the Aurignacian from the latter. They are rare—it is strange that only 100 or 200 meters along the Voultron toward the Doctor's "logis" is, in a similar rock-shelter, an Aurignacian station, small, it is true, but altogether different from La Quina.

To an Americanist, accustomed to cultures of enormous geographical extent and striking similarity among themselves, the absolute cultural differences observable in this region within

stone-throws of each other (e. g., Laugerie-Haute and Laugerie-Basse, and a better contrast between La Quina and the Grotte de la Fontaine, 20 kilometers to the north)—this juxtaposed tossing

FIG. 86.

FIG. 87.

together of cultures thousands of years apart is, to repeat, a standing wonder.

According to Bourlon the Mousterian of La Quina corresponds to "Couche 3" at Le Moustier.

In 1912 the Congrès Préhistorique de France was held at Angoulême, under Dr Henri Martin's presidency, for the purpose of studying the station on the ground. Mrs Peabody and the author had the good luck to be present and to stay over a few days and help dig. The results of this redoubled digging, increased by two or three times as many specimens given outright by the Doctor himself, were sent home and were distributed into the charge of the institutions mentioned at Andover, Cambridge, and Washington. The series reserved for Harvard had been prepared by him for the Congrès International d'Anthropologie et d'Archéologie Préhistoriques, which met in October of that year in Rome; he changed his mind and sent the series to the Peabody Museum.[1] These

[1] For a general survey of the site the best reference is to the *Comptes-Rendus* of the Congress at Angoulême, 1912, pp. 282–296.

series were largely picked specimens of the type to make museum men glad. The series sent home in 1913 is just as the fortune of the pick got them out—dirt, breccia, and all. They were washed and studied here, and for that reason have alone been used for the few necessary statistics before the conclusion of this paper.

FIG. 88.

FIG. 89.

FIG. 90.

Much to the delight of his guest and the curiosity of the Martin household, a new trench was opened in the same rock-shelter about 30 meters from the work of former years. This was in the middle of September, 1913, and the writer had virgin soil. Strangely enough the whole shelter faces somewhat north of west—pleasant for the excavators but unpropitious for the Mousterians. Not knowing what horizontal stratum the new cut would correspond to, he called this one "gamma," and the vertical "M" in line with the earlier. The collection at the site thus comes almost equally from the two positions, "M. Gamma," and "C 2," a former position that seems of inexhaustible richness.

There follow a few of the inevitable tabulations with comments.

The typical "pointes Moustériennes" as well as the "racloirs" are comparatively small. Large specimens have been found at La Quina, but they are rare.

Many of these smaller implements are of excellent workmanship.

When the chipped face is uppermost and the sharpest angle points to the cartographic north, the scraping edges are as shown in the table.

Peabody Museum La Quina Collection, 1913

	C 2.	M. Gamma.
Pointes Moustériennes	9	12
Pointes Moustériennes with double patination		1
Pointes Moustériennes with concavity	2	
Racloirs	35	50
Racloirs with concavity	3	6
Racloirs with suggestions of manufacture	2	
Racloirs with double patination	4	1
Racloir-couteau	1	
Grattoir	1	6
Grattoir with suggestions of manufacture	1	
Racloir-grattoir	1	
Knives	4	3
Nuclei	6	11
Chips with partly original surfaces	92	74
Chips with no original surface	80	118
Quartz specimens	12	37
Fossils	2	
TOTAL	255	319

Size of the Major Specimens at La Quina[1]

		C 2.	M. Gamma.
Pointes Moustériennes	Large: 8 cm. + long	1	0
	Small; less than 8 cm. long	8	12
	Total	9	12
Racloirs	Long; 10 cm. + long	0	1
	Medium; more than 7 cm. and less than 10 cm. long	5	16
	Short; less than 7 cm. long	30	33
	Total	35	50

Position of the Scraping Edges

		C 2.	M. Gamma.
Pointes Moustériennes	Scraping edge on right	6	3
	Scraping edge on left	1	2
	With two scraping edges	2	7
	Total	9	12
Racloirs	Scraping edge to right	8	15
	Scraping edge to left	9	12
	With two scraping edges	2	9
	Undetermined	16	14
	Total	35	50

[1] The "pointes" and "racloirs" of the simple type are alone included here.

By the preceding tables M. Gamma seems to have rather a better showing than the older C 2.

Of specimens in flint, C 2 provided 72 against 172 chips, or 30% against 70%. Of specimens in flint, M. Gamma provided 90 against

FIG. 91.

FIG. 92.

192 chips, or 32% against 68%. The proportion is, however, surprisingly like, and still more goes to show the exceeding richness of the station.

In "pointes Moustériennes" the two trenches are nearly even; the relative proportion of this much sought specimen is not high.

From long experience, when a "pointe" or "racloir" is placed point upward, one is accustomed to think of the principal scraping edge as being on the right. The tables show a slight preponderance, but not enough to theorize about, let alone to put forth any idea as to right- or left-handedness or ambidexterity.

It goes without saying that the retouched scraping edge is on the face other than that carrying the bulb of percussion; this, however, is not universal. When the "lower" face is looked at, there is a tendency for the bulb of percussion to be at or near one rather than under the scraping edge (as of course it should not be), or opposite the scraping edge (as it would seem it should be).

There are several interesting specimens of "pointes" and "racloirs"; not a few "racloirs dégagées" with one end turned up, and "hashers," more or less semilunar in shape, which purposely or otherwise often carry much of the original limestone crust (for easy grasping).

It is not necessary to take quite seriously all the discussion as to hafting of the flints from Chelles to La Madeleine inclusive. All the ethnological parallels available do not furnish proof that one paleolithic implement was hafted; all the contrary evidence in the world will not convince one who has studied the specimens "with concavity," i. e. with a hollow, with or without a distinct stop-ridge forward of the hollow, that the implements were not hafted. It does not look like accident or selection; it appears like "preconceived form"; it may be any one or all three.

FIG. 93.

FIG. 94.

The nuclei are interesting for a Mousterian station; some challenge Grand Pressigny. From "C 2" are two big ones, 60 and 55 cm. high respectively, and four small ones suitable for sling-stones(?). These have 6, 9, 9, and 7 faces in order besides the base; one face may be natural. "M. Gamma" produced nine of ordinary type, a sling-stone with nine faces, and a high carinated specimen with secondary chipping on the front; this looks like the beginning of the succeeding epoch.

The patination of specimens is interesting. The phenomenon of double patination is not rare, and is of especial interest and original research to the Doctor himself.

In America (especially among the late Dr Winchell's specimens) and in England (among Dr Sturge's Mildenhall flints) double patination occurs again and again.

The alteration of surface often goes very deep or quite through the specimen.

It occurred to the writer that an examination of the specific gravity of a series of specimens ranging from unaltered flint to the most changed would show graphically the effect of exposure. The work was done by Mr W. G. Foye under the kind direction of Professor Charles Palache of Harvard University.

Specific Gravity of Specimens

	Specific Gravity.	Fig.	Size.	Museum No.
Nucleus dark, unpatinated, lustrous...	2.535	86	1 : 1	E. 604
Long "racloir," unpatinated, lustrous..	2.542	87	1 : 1	E. 544
Triangular "racloir," much patinated..	2.285	88	1 : 1	E. 580
Small knife; partly altered.....	2.260	89, 90	1 : 1	E. 766
Flat flake, altered yellow patina.....	2.225	91	1 : 1	E. 595
Doubly chipped fragment, yellow patina	2.225	92, 93	1 : 1	E. 601
Thick chip, white, much altered.....	1.692	94	1 : 1	E. 564

This table is striking enough and tells its own story. Until however, more is known of the causes and processes of patination and what may be called "*cachalonnement*" of flint, it is quite useless to draw conclusions as to great duration of exposures.

The crowning glory of La Quina is the quantity of animal bones, showing traces of flint tools, that are there found.

The table that follows gives some idea of the result of excavation.

Specimens in Bone, Horn, Antler, etc.

C 2.		M. Gamma.	
Scratched		Scratched	
Identifiable.....	5	Identifiable.....	6
Not identifiable.....	67	Not identifiable.....	86
Total.....	72	Total.....	92
Not Scratched		Not Scratched	
Identifiable.....	56	Identifiable.....	21
Not identifiable.....	281	Not identifiable.....	235
Total.....	337	Total.....	256
Percentage of 409		Percentage of 348	
Identifiable, scratched.....	.012	Identifiable, scratched.....	.017
Not identifiable, scratched ..	.164	Not identifiable, scratched ..	.247
Identifiable, not scratched..	.137	Identifiable, not scratched..	.061
Not identifiable, not scratched	.687	Not identifiable, not scratched	.675
Total.....	1.000	Total.....	1.000

Dr Henri Martin's warning to save all the fragments, as from one-quarter to one-half carried human markings, was somewhat sceptically received, and it was not until after careful washing and examination through a glass that his words became justified.

FIG. 95.

FIG. 96.

FIG. 97.

In the table every specimen that did not seem surely flint-marked was thrown out of the "scratched" list, yet from M. Gamma there is a proportion of .264. These markings are not at all due to drying and splitting of the bones, nor to gnawing; their localization and parallelism, even if the individual scratches could not determine the point, are conclusive.

Besides the horse and bison phalanges and humeri the small fragments carry a great many marks.

The discussion as to the way these came to be is all more or less convincing. Ordinary cutting and scraping to get off meat and skin will not account for many localized phenomena; disarticulation and more vigorous use of the bones subjectively or objectively must be invoked.[1]

[1] See figures 95, 96, and 97. The identifications were kindly made by Dr Glover M. Allen of Harvard University.

Most of the bones found during the visit can be referred, if identifiable at all, to the bison, ox, horse, fallow deer, and reindeer.

Great numbers of teeth of various animals were found; they resist decay.

It is not to be forgotten that a superb fragment of mammoth tusk lay in situ at the time of the Angoulême Congress.

No human bones were found during the ten days.

There is further study to be done and problems of importance to be worked out. A little piece of manganese found at the time with scratches suggests paint and color; the suggestion is all that is needed for one who has in mind the "*rapprochements avec l'Aurignacien.*"

The whole of the reason for the bone markings is not known. The quartz specimens, of which there are a fair number, deserve study in connection with similar specimens from the Columbian gravel at Trenton.

The human remains found at La Quina are still *sub lite* and daily prayers for more are offered to complete the testimony.

A field of fair chance, charming hospitality, and lovely nature is La Quina.

Among his generous gifts, Dr Henri Martin included a maquette of the La Quina skull in situ and a reconstruction of the head. Dr E. A. Hooton of Harvard University has kindly consented to add his comments on the latter.

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CAMBRIDGE, MASSACHUSETTS

NOTE ON THE LA QUINA SKULL

DR HENRI MARTIN has proceeded along right lines in his reconstruction of the Neanderthaloid type on the La Quina skull in so far as he has used a cast of the skull upon which to build up the soft parts of the head. The result of his labors is most interesting, but to me not altogether satisfactory.

In the first place Dr Martin has not given the specimen a sufficiently powerful musculature. It is inconceivable that the massive La Quina mandible should have been associated with such an attenuated temporal muscle. Even if the area of attachment on the skull was not extensive,

the muscle must have been very thick—thick enough to fill out the temporal fossa and to mask the projection of the zygomæ which is so marked in Dr Martin's finished reconstruction. A similar criticism applies to the restoration of the muscles attached to the occiput. The immense occipital torus afforded attachment for short powerful muscles; not for the long slender muscles indicated in the bust modeled by Dr Martin. In general the neck is much too long and slim.

In his reconstruction of the soft parts of the face Dr Martin states that he has been inspired by observations of the facial characters of the chimpanzee. Since I believe that the Neanderthaloid type, in spite of its many simian characters, was an essentially human type, I cannot admit the legitimacy of this method of restoration. Dr Martin has given his La Quina specimen the face of an anthropoid ape. Neither the fragmentary remains of the facial skeleton of the La Quina skull nor the fairly extensive comparative material in other Neanderthaloid crania justify such a reconstruction.

I nevertheless feel that science is deeply indebted to Dr Martin for his conscientious and painstaking work on the osseous remains of the La Quina Man, which has resulted in the addition of another invaluable specimen of the Neanderthaloid type to supplement our knowledge of this most interesting fossil race.

E. A. HOOTON

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TEWA KINSHIP TERMS FROM THE PUEBLO OF HANO, ARIZONA

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INTRODUCTION

THE information presented in this paper was obtained during a visit to the Tewa village of Hano on the First Mesa of the Moqui reservation, Arizona, in January, February, March, and April, 1913. The visit was made at the expense of the Research Fund of Somerville College and of the Ewart Trust, and was facilitated by the generous help and advice of the Director and staff of the School of American Archæology, and particularly of Mr J. P. Harrington. I have also to thank Mr Drummond, U. S. Indian Superintendent at Polacca, for practical help and kindness, and Miss Rodger, field-matron at Polacca, for valuable information and help of many kinds.

The results of the visit are to be published elsewhere, probably in England, but it is thought that a preliminary note on the kinship terms may be of present interest. These terms were recorded and tested, not only by direct inquiry through interpreters, but also by daily vernacular use of them in familiar intercourse during nearly four months.

CLANSHIP

The most important and most self-conscious social units at Hano are the clans. Clanship is reckoned by maternal descent; marriage is matrilocal; the clans (and groups of linked clans) are exogamous.

Tewa kinship terms belong to a clan system.[1] At Hano, where

[1] See W. H. R. Rivers, *Kinship and Social Organisation*, London, 1914, pp. 71, 82. Dr Rivers proposes a threefold division into "clan", "kindred" (based on the patriarchal undivided household), and "family" (father-mother-and-child household) systems of kinship, in place of the twofold division into "classificatory" and "descriptive". On the impropriety of the latter terms see also A. L. Kroeber in *Journ. Roy. Anthr. Inst. Gt. Brit.*, 1909, XXXIX, p. 77.

the matrilinear clan system is in full force, the Tewa kinship terms express the facts of social life and are used consistently; in the Tewa pueblos of New Mexico, where clanship is now reckoned almost entirely by paternal descent and the clans have lost their importance, while the father-mother-and-child family has become the primary unit of social life, the same kinship terms are used inconsistently, with many local variations, and "descriptive" compound terms are being introduced to remedy the confusion.[1]

WORDS APPLIED TO CLANSFOLK

ɬowa: ŋǫ̀bi (*ŋǫ'ɟmb̨i*) *ɬowa*, "my (our) people": see *ɬowa* below.

matɥ: chiefly used in 2 + plural; *ŋǫ̀bi* (*ŋǫ'ɟmb̨i matɥ'ɟ*, "my (our) clanspeople", applied to fellow-clanspeople who are not housemates with the speaker; *ŋąmpą̄ju ŋą'ɟmb̨i matɥ'ɟn ɖi mɥ*, "*Ŋąmpą̄ju* (i. e. N's household) are our clansfolk". The Bear clan at Hano would speak of the Bear clan at Oraibi as *ŋą'ɟmb̨i matɥ'ɟ*.

WORDS USED IN CONNECTION WITH KINSHIP

ɬowa, "people". (1) Company as opposed to solitude; *ɬowa we ɖi 'ą̄ɖi*, "in the absence of the people," or, "there being no inhabitants". (2) Human beings as distinct from things and other animals; *ɬowa p'o*, human hair. (3) Indians as distinct from white people; Pueblo Indians as distinct from other tribes; Tewa Indians as distinct from their neighbors the Hopi of Walpi and Sichomovi; thus, *ɬowa sa*, Indian tobacco; *ɬowadi ɖi pɟntąŋ'i'i, ʃabè ɖi ʃiłą̄*, "Pueblo Indians are stout-hearted, Navaho are lazy". (4) Corresponding to the English "clan"; *ŋǫ̀bi ɬowa 'o'ᵒ 'ɥmmɥ*, "my people now thou art", said to a person adopted into the speaker's clan; *ke ɬowa 'ɟmb̨i sa'i 'o mɥ*, "I am the Bear people's daughter-in-law", said by a woman whose husband is of the Bear clan; *'ɟmb̨i pi ɬowa*, "their own relations". (5) *ŋǫ̀bi ɬowa*, "my husband", and (doubtful use) "my wife".

ke̊ma. Friend, male or female; guest-friend in another village or tribe; *ŋǫ̀bi ke̊ma 'ǫ'ᵒjɥ*, "my paramour". 2 + plural *ke̊ma'ɟ*.

pu'a, puwa. Partner, intimate friend, chum. *da puwa mɥ*, "they are a pair of friends". 2 + plural *puwa'ɟ*, partners, allies (e. g. in a game).

sɥntsi. Intimate friend, chum.

[1] Such are *papajija* for great-grandfather's mother, *ta⁴amą̊'ᵉmą̊* and *tɥ'ᵉsnɥta⁴a* for paternal uncle. See J. P. Harrington, "Tewa Relationship Terms, *American Anthropologist*, n. s. 14, 1912, pp. 472–498.

sę̣ŋ, ʃę̣ŋ, man, male, married man, husband. *waju sę̣ŋ*, male horse. *ʃę̣ŋ 'ɯmmɯ!* "thou 'art a man!" (i. e. bold, strong). *sę̣ŋ, ʃę̣ŋ*, warrior; *sę̣ŋ k'awo*, war-song; *ʃę̣ŋ wagi*, "like men", boldly. 2 + plural, *sę̣nnɑ̨ŋ, ʃę̣nnɑ̨ŋ*, "men" in general; "the married men" of a household, kiva, or town.

sę̣no, ʃę̣no, old man. As a polite substitute for *sę̣ŋ*, it is used more freely than the New Mexican Tewa *sę̣nɖo*. *nɑ̨bi sę̣no*, my husband. *sę̣no'e*, a little old man. *sę̣no ɬsɑ̨'ᵊ*, "old man whiteness", aged man. 2 + plural, *sę̣na* and *sę̣no; sę̣no ɬsɑ̨'ᵊ puwa'e 'i wowa jiɓi*, "ye shall live to go about as old men."

Both *sę̣ŋ* and *sę̣no* are compounded to form personal names; *'u'uba sę̣ŋ*, "tobacco man", *daʃę̣no*, "grass man", *sę̣no mele*, "ball man" (a nickname).

kwi (New Mexican Tewa female, adult woman, married woman) is obsolete and replaced by:

kwijo, woman, adult woman, married woman, "lady", wife, female. *wak'a kwijo*, (female) cow. *kwijo ɬsɑ̨'ᵊ*, "woman whiteness", aged woman; *kwijo kele*, "strong married-woman", young married woman. 2 + plural *kwijo;* "women" in general, *kwijo we ɖi pɻn'ɑ̨ŋ*, "women do not think", and "the women", of a town, etc. *kwijo* is compounded to form personal names; *pu kwijo*, "rabbit lady".

'ɑ̨'ᵃjɯ (N. M. Tewa *'a'ᵃñu*), adolescent girl, unmarried girl (opposed to *kwijo*). *'ɑ̨'ᵃjɯ sojo nɑ̨ puwa mɑ̨ŋ*, "she is getting to be a big girl". 2 + plural *ɑ̨'ᵃjɯŋ*, "girls", "the girls". *wak'a 'a'ᵃjɯ*, heifer. Sometimes denotes "virgin"; but, *nɑ̨bi kema 'ɑ̨'ᵃjɯ*, "my girl friend", my paramour; *wɑ̨nʃaɓè ɑ̨''ᵃjɯna 'i pisō piwe ma'i poɖi*, "Navaho girls, ye grow weary without your mates." Compounded to form personal names; *poɓi 'ɑ̨'ᵃjɯ*, "flower-girl".

'e'ᵉnu, adolescent boy, unmarried man. 2 + plural *'eᵉnɯŋ*, "boys", "the boys". Of a new-born child one inquires, *'a 'ɑ̨'ᵃjɯ, 'a 'e'ᵉnu?* "whether a girl or a boy?" *'e'ᵉnu sese'e*, "tiny baby boy".

'ɑ̨'ᵃjukele (N. M. Tewa *'a'ᵃñuke*), young girl.

'e'ᵉnukele (N. M. Tewa *'e'ᵉnuke*), young boy. May be added to personal names, in apposition; *pɛ̨ni 'e'ᵉnukele!* "Peni, what a boy you are!" *'e'ᵉnukele'e*, a little young boy.

'e, child. 2 + plurals *'ejɑ̨* (N. M. Tewa *'eñɑ̨* and *'e*). Idiomatic plural; *'ejɑ̨ 'ɯm mɯɖi*, "when thou wast a child"; *'ejɑ̨ 'ɯ wi po*, "thou art becoming young again"; *'iɓi 'ejɑ̨ khɑwɑ̨*, "her baby-name" (nickname acquired in childhood).

'e is postfixed, to form diminutives, (1) to ordinary nouns; *kege'e*,

little house, *musa'e*, little cat or kitten; (2) to nine of the kinship terms (*mæmæ*, *papa*, *p'eƥ'e*, *saja*, *t'ele*, *tulɣ'ᵘᵑ*, *ko'o*, *ka'je*, *kuku*) to form reciprocal terms, as, *ŋǫbi saja*, my mother's mother, *ŋǫbi saja'e*, my daughter's child (woman speaking).[1]

KINSHIP TERMS

In direct address, kinship terms are usually but not always prefaced by *ŋǫbi*, "my", or *ŋǫ'ɻmbi*, "our". Thus: *ŋǫ tiɗi*, *ŋǫbi 'el* "shut it, my child!" *ŋǫbi tije*, *'agu dʒŋ 'awo'a ƥa*, "my younger sister, pray cook for me!" A man who is smoking with his father's clansman says, *ŋǫbi tada!* "my father!" to which the other replies, *ŋǫbi 'el* "my child!" But also: *'otsu'abe saja!* "come in, grandmother!": *mæmæ'ɻ!* "mother's brethren!" (as a greeting, e. g. to fellow-tribesmen).

jija. Mother; wife of speaker's father; wife of any man whom the speaker calls *tada*, e. g. wife of the speaker's father's brother. If a sick child is "given" by its parents to another woman "to make it live", the child calls the woman *ŋǫbi jija*. An orphan child calls the female relative who takes care of it *ŋǫbi jija*. A stranger living in a household and treated as one of the family, having no real relations in the place, may call the lady of the house *jija*. A man may call his wife's mother or his wife's mother's sister *jija* instead of *jakwijo*. The wife of a chief is sometimes said to be the mother, *jija*, of all the people.

2 + plural, *jija'ɻ*.

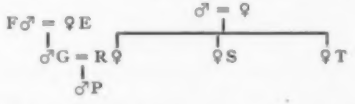
Reciprocal term: *ŋǫbi 'e*.

'e. Child (son or daughter), irrespective of age. See also under *tada*, p. 278.

saja. Mother's mother; mother's mother's sister; any woman whom the speaker's mother's mother calls *kaka* or *tije*. Any female ancestor of the speaker's clan, however distant in time. The senior lady of a clan or clan-household, who, if she has grandchildren, may be called *saja* by her sons and daughters and even by her brothers. Thus: "*kelowa* have no *saja*, they are all rather young ladies, nearly the same age". The senior lady of the clan or group of clans in another village or tribe corresponding to the speaker's own clan or group of clans; thus, to a member of the Hano Corn clan, *ŋǫ'ɻmbi k'oso'on saja*, "our Hopi mother's mother", means the senior lady of the Corn clan at Walpi, and *ŋǫ'ɻmbi ʃabè saja*, "our Navaho mother's mother" means the

[1] See J. P. Harrington, op. cit., and E. Sapir, A Note on Reciprocal Terms of Relationship in America, *American Anthropologist*, n. s. 15, 1913, pp. 132–138. See also the present writer's "A Note on Kinship Terms Compounded with the Postfix *'e* in the Hano Dialect of Tewa," to be published in Vol. 16, No. 4, of this journal.

senior lady of a group of the Navaho Corn clan living in the neighborhood. An old woman, apart from relationship to the speaker; thus (of a Navaho house) *wi sajamo nạ kwo*, "there is only one old woman inside": *'o maju po, saja'o'ᵒ 'o poði*, "I get tired, having already become an old woman". In folk-tales, the resourceful old woman who is called in to help the men with her magic is "a *saja*". The *'e wɤlɤ*, the subjects of many comic-heroic tales, live alone with their *saja*. Perhaps as a complimentary term, *saja* is sometimes substituted for other relationship terms. Thus A and B, the late senior ladies of the two branches of the Corn clan, were conventionally described as "sisters"; their respective daughters C and D are also called "sisters". Naturally C speaks to her own daughters (E, F) of "your *saja* B", on the principle that one's *saja*'s sister is also one's *saja;* but logically, D's daughters (G, H) and granddaughters (J, K) should address C as *ka'je* or *ko'o*, whereas in fact G and H often call C *saja*, and J and K call C *saja* and *papa* and *ka'je* indifferently. The father's mother is sometimes called *saja* instead of *kuku*. In one case a boy's *ki'ᵘ'u* who named him was spoken of as his *saja*, not *kuku;* in another case an unrelated woman called in to name a boy was sometimes called by him *saja* instead of *kuku*. One girl supposed that her mother's father's mother would be her *saja;* strictly speaking, she would be her *t'eɬe kwijo*. A man calls his wife's *saja* and his wife's *kuku* alike "*nạ'ɨmbi saja*". The women of a clan may call their *sǫ̨jɨnǫ̨i's* mother "*saja*"; the relationship seems to be reckoned through the children whose *kuku* or *saja* she is. Thus (in the annexed diagram) S, T, and all the other women of P's clan have to call E "*saja*".



2 + plural *saja'ɨ*. The female ancestors of the clan collectively are *nạ'ɨmbi saja'ɨ*, "our mother's mothers.

Reciprocal term: *nąbi saja'e*.

papa. Mother's mother's mother; mother's mother's father; mother's father's father; (rarely) mother's mother's brother; father's father's mother. The daughter of the speaker's mother's mother's mother's sister or *ko'o* may be called indifferently *saja*, *ka'je*, or *papa*.

2 + plural *papa'ɨ*.

Reciprocal term: *nąbi papa'e*. (See *p'eɓe*).

There is probably no proper term for any generation prior to the speaker's *papa*, all earlier generations of his own clan being *saja'ɻ* or *mɤmɤ'ɻ*, and earlier generations of the clans related to him by marriage not being interesting. But one man professed to recognize the New Mexican Tewa *papajija* for the mother of one's *papa*.

mɤmɤ (New Mexican Tewa *mɤ^{n}mɤ*, for uses see Harrington, op. cit.). Mother's brother; mother's sister's son senior to the speaker; elder clansman. 2 + plural *mɤmɤ'ɻ*. Reciprocal term *mɤmɤ'e*, sister's child; mother's sister's child junior to the speaker; junior clansman (man speaking): 2 + plural *mɤmɤ'e*. *mɤmɤ* is applied by males and females to males only, *mɤmɤ'e* is applied by males only to males and females. All the men of the speaker's clan who are not the speaker's own brothers, to the remotest antiquity, must be the speaker's *mɤmɤ'ɻ* if senior to him, or if junior to him his *mɤmɤ'e*. (But see *p'eƥe* below.) Thus an historical or legendary character will be identified by saying, "he was N's *mɤmɤ*", that is, he was a man of the B — clan, to which N belongs. A man of a clan or group of clans in another village or tribe corresponding to the speaker's clan or group of clans must be the speaker's *mɤmɤ* or *mɤmɤ'e*, and, for reasons of politeness, he is generally called *mɤmɤ* unless he is obviously very much younger than the speaker. Thus a Hopi man of the Rabbit clan at Oraibi or Moencopi, or a man of the Navaho Tobacco clan is addressed as *mɤmɤ* by men, women, and children of the Tewa Tobacco clan at Hano. (Similarly, a woman of either of those clans would be called *ka'je*, and an old woman *saja*, by men, women, and children of the Tewa Tobacco clan; a young girl would be called *ka'je'e* or *ko'o'e* by the women, *mɤmɤ'e* by the men.) A Tewa man arriving from the Tewa pueblos in New Mexico is greeted as *mɤmɤ* by any Tewa person of Hano before his clanship has been ascertained, and his people at home are inquired for collectively as *mɤmɤ'ɻ; mɤmɤ'ɻ 'ɐn dibi 'o?* "what are our uncles (i. e. the Tewa in New Mexico) doing?" Thus *mɤmɤ* is equivalent to "elder clansman" and also to "elder tribesman". The son of the speaker's mother's half-sister may be called *mɤmɤ*, although he is not a fellow-clansman. (See p. 277 below). A man may speak of his wife's *mɤmɤ* as "*nɑ'ɻmḭ mɤmɤ*", "our mother's brother", by courtesy, but the response will be not *mɤmɤ'e* but *sɑ̄jɻŋgi*, "bridegroom". A man who is in company with his children will say, on meeting a man of his wife's clan, "here comes *nɑ'ɻmḭ mɤmɤ*", merely for the sake of the children's manners.

p'eƥ'e. Mother's mother's brother. If it is desired to distinguish

between generations, the mother's-brother's mother's-brother may be distinguished from the mother's brother and earlier generations (*mɤ̨mɤ̨*, *mɤ̨mɤ̨'ɻ*) as *p'ep'e*. Similarly a man of the clan corresponding to the speaker's clan in another village or tribe may be called *nǫ'ɻmb̨i p'ep̨e* if he is obviously much older than the speaker.

2 + plural *p'ep̨e'ɻ*.

p'ep̨e is said to be "the same as *papa*", and the reciprocal terms are *papa'e*, *p'ep̨e'e*, and *pe'ᵉ'e* (obsolescent).

ko'o. Mother's sister; mother's sister's daughter senior to speaker; mother's mother's sister's daughter's daughter senior to speaker; etc. 2 + plural *ko'o'ɻ*.

Reciprocal terms *ko'o'e* and *kowe'e*.

If the persons concerned are of different generations, the senior by generation is *ko'o* and the junior *ko'o'e;* if they are of the same generation, it is doubtful whether the terms depend on the age of the individuals or the seniority of their mothers. Thus my sister's daughter (woman speaking) is undoubtedly my *ko'o'e*, but my mother's sister's daughter may be my *ko'o'e* or my *ko'o*.

ka'je seems to be a fairly general term for ladies of the speaker's clan senior to the speaker. Thus, my mother's sister is my *ko'o*, but my mother's elder sister would be preferably called my *ka'je*. My *saja*'s sister is my *ka'je* unless I call her *saja*, and my *saja*'s sister's daughter is my *ka'je*. My mother's mother's mother's sister is my *ka'je* or my *papa*, and her daughter is my *ka'je* or my *saja*. The two female heads of two branches of a clan call each other *ka'je* unless they call each other elder and younger sister. The mother's younger sister may be called *ka'je* if she is elderly and the head of a house. The senior lady of the Hano Corn clan calls the senior lady of the Walpi Corn clan *nǫb̨i ka'je*. *ka'je*, or *ka'je kwijo* is the proper term of address to any woman of the clan corresponding to the speaker's clan in another village, and for a Tewa woman from New Mexico irrespective of clan; *ti ka'je kwijo 'ɻm mɻ*? = "what, art thou a Tewa woman?" In these extensions it is the feminine equivalent of *mɤ̨mɤ̨*.

2 + plural *ka'je'ɻ*.

Reciprocal term *ka'je'e*.

'ătse'e is an obsolescent term for the oldest lady of a clan, "much the same as *ka'je*". Like *kǫ'ǫŋ*, it survives in the nomenclature of the imaginary families of katsinas and as a personal name.

pipi. Elder brother. 2 + plural *pipi'ɻ*.

kaka. Elder sister. 2 + plural *kaka'ɻ*.

kǫ'gŋ. Obsolescent term for elder sister.

tije. Younger brother, younger sister (New Mexican Tewa *ti'u*). 2 + plural *tije'ɻ*. *pa'ᵉđe*, elder brother, elder sister (New Mexican Tewa *pa'ᵉɹe*) and *ti'u*, younger brother, younger sister, are obsolete at Hano as kinship terms. *pa'ᵉđe* is used in comparisons; *'ibi pa'ᵉđe 'o mɻ*, "I am older than he"; *pa'ᵉđe 'ɻm mu'i*, "thou wilt go first, or, ahead"; *'ibi pa'ᵉđe*, "his predecessor" (in office); *pa'ᵉđeko*, early planting. So, from *tije; nąbi tilegi* (New Mexican Tewa *ti'uge'i*) *nų 'ᵪ'ᵪ*, "he comes next to me, follows me, overtakes me;" *'ibi tile*, "his successor" in office.

Apart from the question of relative age, brothers in general are *pi̥pi*, sisters *tije;* it seems that brothers are assumed to be senior to sisters, and entitled to respect as such, in the absence of evidence to the contrary. *'ɻmbi tije 'o mɻ*, "I am your sister [and yet I will stop your quarrel]". *đa tije mɻ* generally means "they are a pair of sisters", *đa pi̥pi mɻ*, "they are a pair of brothers. More fully, *đa pi̥pi mɻ, đa tije mɻ*, "they are elder and younger brother". "They are brothers-and-sisters" is generally expressed by *đa tije mɻ*.

The following classes of relatives call each other brothers and sisters: (1) Children of the same mother by the same father or by different fathers. (2) Children, daughter's children, daughter's daughter's children of sisters (but see below). (3) Children of the same (own) father, by the same mother or by different mothers. (4) Persons who call the same clan "father", *tađa;* e. g., the children of two brothers, or the children of a *mᵪmᵪ* and *mᵪmᵪ'e;* thus *Sitki*, a man of the Hopi Sand clan, and *P'oŋ*, a woman of the Tewa Katsina clan call each other brother and sister because their respective fathers were men of the Tewa Cloud clan. If necessary, own brothers and sisters may be distinguished by such phrases as *'ibi pi pi̥pi*, "his own elder brother"; *đa pi̥pi mɻ'ɻ, đa tije mɻ'ɻ, wibi'idi đa pi'ⁱ, 'ima đᵪŋ jala*, "couples who were elder and younger brother to each other, who issued from the one [mother], the same were fighting."

The nomenclature for the descendants of sisters is somewhat inconsistent and perhaps transitional in character. The mother's sister is never called "my mother" *nąbi jija*, but *nąbi ko'o* or *nąbi kaje*, and a woman never calls her sister's child *nąbi 'e* "my child" but *nąbi ko'o'e* or *nąbi ka'je'e*. But on the other hand, a man may call his wife's mother and his wife's mother's sister alike *nąbi jija;* and the mother's-sister's husband, and the husband of a woman whom the mother calls "sister", may be called *tađa* "father", instead of *sǫ̨jɻŋgi'* "bridegroom"; the sister of the mother's-mother is called (like the mother's-mother her-

self) *saja*, and the sister of the mother's-mother's-mother is called (like the actual mother's-mother's-mother) *papa*. Two women who are daughters, or granddaughters, or granddaughters (by maternal descent) of a pair of sisters generally address each other as "my elder sister" *ŋǫ̀bi kaka* and "my younger sister" *ŋǫ̀bi tije*, although the junior may also call the senior *ŋǫ̀bi ka'je*, "my mother's sister".

In practice, the children of sisters almost always address each other as brothers and sisters, and are spoken of as such; *ɖi tije mɯ*, "they are geschwister". But my informants, when they discussed relationship terms or explained the precise relationship of individuals for my benefit, gave the following rules: A man calls his mother's sister's son (that is, his *ko'o's* son) *mæ̨mæ̨* if senior to himself, *mæ̨mæ̨'e* if junior. A man calls his mother's sister's daughter (his *ko'o*'s daughter) *ko'o* if senior, *mæ̨mæ̨'e* if junior. A woman calls her *ko'o*'s son *mæ̨mæ̨* if senior to herself, *ko'o'e* if junior. A woman calls her *ko'o*'s daughter *ko'o* if senior to herself, *ko'o'e* if junior. Seniority seems to be reckoned sometimes by the relative ages of the speaker and the person spoken of, sometimes by the relative ages of the parties' mothers. The same usage applies to the grandchildren or great-grandchildren (in maternal line) of a pair of sisters. It also applies to the children of half-sisters: thus, A and B had the same father, but their mothers were of different clans, A having been born of a first marriage and B of a second: A and B were, of course, of different clans: B's children call A's son *mæ̨mæ̨*. In this exceptional and interesting case a term normally limited to the speaker's own fellow clansmen (real and fictitious) is applied on purely genealogical grounds to a member of another clan.

taɖa (New Mexican Tewa *taɹa* and *tatà*) father; mother's husband; father's brother; father's clansman. 2 + plural *taɖa'ɻ*. If a woman of the Corn clan takes a husband of the Cloud clan, her children call every man and boy of the Cloud clan, in their own village and in other villages, irrespective of age and generation, *taɖa*. If necessary the speaker's own father may be distinguished as *ŋǫ̀bi pi taɖa*, "my own father", and a stepfather as *ŋǫ̀bi kwala taɖa* (New Mexican Tewa *kwataɹa*). As a rule the general knowledge of genealogical facts prevents ambiguity; thus a woman may remark that she has "only two *taɖa'ɻ*", meaning that her own father has only two own-brothers, although she calls all the males of her father's clan *ŋǫ̀bi taɖa'ɻ*. An individual may be distinguished by adding his personal name; *ŋą'ɻmb̥i taɖa Sulu*, "our father Sulu".

The husband of the speaker's *ka'je*, i. e. of the speaker's mother's sister, may be called *taɖa* instead of *sǫ̀jɻŋ̀gi*.

Sick people often "give themselves" to a man "who thinks strong" and thereafter call him *taɖa;* this may involve joining the *taɖa*'s ceremony. People on a journey far from home "choose a father" as a sort of vow for their safe return and call him *taɖa.* A person may have two or more *taɖa'ɻ* of this kind. Sick children are sometimes "given" to a married couple and taught to call them *taɖa* and *jija.* A host, patron, or protector in a distant place may be called the *taɖa* of an individual or even of a whole tribe; thus a white man in Santa Fe who fed famine-refugees from the Hopi villages was described as *k'osō'ōn 'ɻmɒi taɖa,* "father of the Hopi". A chief and his wife are the *taɖa* and *jija* of all the people.

Reciprocal term, *'e.* 2 + plural *'ejᾳ* (New Mexican Tewa *'e, 'eñᾳ*); own child, brother's child, clansman's child (male speaking). All the people are the children, *'ejᾳ,* of a chief.

tɻɬɻ'ʷɳ (New Mexican Tewa *tɻʷɳɻ*). 2 + plural *tɻtɻɳ'ɻ.* The father's own brother may be distinguished as *nąɒi tɬɻ'ʷɳ;* reciprocal term *nąɒi tɻɳ'e;* this is said to be obsolescent, *taɖa* with reciprocal *'e* being more usual.

ki''ʲu (New Mexican Tewa *ki'i*). Father's sister; father's sister's daughter; father's mother's sister; father's clanswoman irrespective of age and generation.

2 + plural *ki''ʲu'ɻ.* Reciprocal terms: to a male, *nąɒi 'e sɕɳ,* "my man child"; to a female, *nąɒi 'e kwijo,* "my lady child".[1]

kuk̆u. Father's mother (Santa Clara Tewa *kugu,* mother's mother's mother). 2 + plural *kuk̆u'ɻ.* Reciprocal term *ku'e.* Since any clanswoman of the speaker's father who cut the speaker's umbilical cord at birth and conducted the naming ceremony, and even an unrelated woman called in to cut the cord, is called *kuk̆u,* it is possible that the title is attached rather to this function (which normally belongs to the father's mother) than to a particular relationship. The father's mother, like the other *ki''ʲu'ɻ,* generally speaks of the child as *nąɒi 'e sɕɳ* or *nąɒi 'e kwijo;* unless she is addressed as *nąɒi kuk̆u,* when of course she responds *nąɒi ku'e.* The *kuk̆u* (whether the father's mother or another woman) is quite often called *saja.* Note, in connection with the Santa Clara Tewa application of *kugu,* that formerly at Hano the mother's mother and the child's own clanswomen used to cut the cord and give the name.

[1] The 2 + plural of *'e,* child, is *'ejᾳ,* but the plural of *ɬ'eɬ'e'e* is *ɬ'eɬ'e'e* and so with the other diminutives. The 2 + plurals of *'e sɕɳ* and *'e kwijo* are said to be *'e sɕɳ'ɻ* and *'e kwijo'ɻ,* but *'e sɕɳ* and *'e kwijo* are more commonly heard; *'imɒi 'e sɕɳ 'ije ɖi''ʲ mowatsigi kwikwo 'ɖɳ,* "they are hanging corn-meal dumplings on their clansmen's sons".

t'eĺe (New Mexican Tewa *t'ete*, mother's father, father's father). Mother's father; mother's mother's husband; mother's father's brother; mother's father's clansman irrespective of age and generation, in the speaker's own village or elsewhere. An elderly stepfather may be called *t'eĺe*, probably because the speaker's children call him so. The use of *t'eĺe* is widely extended; the father's father, father's father's brother, father's sister's or clanswoman's husband, father's father's father, father's mother's father, mother's father's father, husband's sister's husband, husband's mother's father and father's father, wife's mother's father and father's father, are all called *t'et'e*, but not their clansmen collectively.

2 + plural *t'eĺe'ɬ*.

Reciprocal term *t'eĺe'e*.

t'eĺe kwijo, "grandfather lady". Mother's father's mother, mother's father's sister; woman of mother's father's clan irrespective of age and generation, in the speaker's own village and elsewhere.

2 + plurals *t'eĺe kwijo'ɬ* and *t'eĺe kwijo*.

Reciprocal term *t'eĺe'e*.

To illustrate the application of relationship names to clans, suppose that A, a Tewa Corn clan woman, married a Tewa Bear clan man and had a daughter B. B married a Tewa Cloud clan man and has a daughter C and a son D. C and D call all males of the Tewa Bear clan, Stick clan, and White-fir clan, the Hopi Bear clan, Bearskin-rope clan and Spider clan, and the Navaho Bear clan, including infants, *t'eĺe*, and all females of those clans *t'eĺe kwijo;* and all the males and females of those clans call C and D *t'eĺe'e*. C and D call all the males of the Tewa Cloud clan and the Hopi Cloud clan, Water clan and Reed clan *taƌa* and all the females *ki''u;* the males of those clans claim C and D as "their children" by calling them *'e*, and the females by calling C *'e kwijo* and D *'e sɛɳ*. (Observe that these junior-to-senior terms are applied to whole clans collectively, but the senior-to-junior terms only to relationships which are genealogically demonstrable; a man of the Bear clan does not apply *t'eĺe'e* to all Corn clan men and women, but only to those who call the Bear clan *t'eĺe* because their own mother's mother married a Bear clan man.) C and D give the title of *jija*, "mother", to the wife of any of their *taƌa'ɬ*, and of "brother" or "sister" to any person whose father, like their own father, is a man of the Cloud clan; but they have no names for the wives and children of their *t'eĺe'ɬ*, the Bear clan men, as such.

sǫ̂ɳ. Husband (New Mexican Tewa *sǫɳ*, husband, obsolescent). The

wife calls the husband *ŋǭbi sǭŋ*, "my mate", *ŋǭbi pisǭŋ*, "my own mate", *ŋǭbi sẹŋ*, "my man", *ŋǭbi sę̣no*, "my old man", and *ŋǭbi ło̱wa*, "my people". The husband calls the wife *ŋǭbi sǭŋ*, *ŋǭbi pisǭŋ*, *ŋǭbi kwijo*, "my lady" (see p. 271), *ŋǭbi ja'a* (obsolete), *ŋǭbi ha'ᵃ* (obsolete), and *ŋǭbi ło̱wa* (doubtful use).

sǭjį̨ŋgi or *sǭjingi* (New Mexican Tewa *sǭñį̨ŋgi*). Bridegroom; daughter's husband, sister's husband, etc.; applied by both males and females to the husband of any woman of the speaker's clan except the speaker's own mother and mother's-mother (see *tada* and *t'ele*). A man expresses his relation to his wife's clan as a whole by saying *'ą̨mbi sǭjį̨ŋgi 'o mų*, "I am their bridegroom". A man calls his daughter's husband *ŋǭbi sǭjį̨ŋgi*, and a woman may call the husband of her *'e kwijo* "*ŋą'ą̨mbi sǭjį̨ŋgi*". It seems that the bridegroom is properly called *sǭjį̨ŋgi* at the end of the marriage month, when he comes to live in the house of his wife's clan: but *sǭjį̨ŋgi* is also applied to temporary connections; thus, to tell a boy that he has a new *sǭjį̨ŋgi* is to taunt him with the light behavior of some woman of his clan.

2 + plural, *sǭjį̨ŋgi'ą̨* and *sǭjį̨ŋgi*.

A man calls his wife's sister's husband *ŋǭbi sẹm pu'a'e*, "my husband partner".

sa'i. Bride; son's wife, brother's wife, mother's-brother's wife, etc.; applied by males and females to the wife of any man of the speaker's clan, and also by a man to his son's wife. (New Mexican Tewa *sa'i'ⁱ*, bride, *sa'e*, daughter-in-law, etc.) A woman calls the wife of her *'e sẹŋ* (e. g. her brother's son's wife) *ŋą'ą̨mbi sa'i* or *ŋą'ą̨mbi 'e sẹŋ sa'i*. A man calls his wife's brother's wife and his wife's mother's-brother's wife *ŋǭbi sa'i*. A woman calls her husband's brother's wife *ŋǭbi sa'i pu'a'e*, "my bride partner". A clansman's widow is called *sa'i* until she marries again and even afterward if she has children by the speaker's clansman.

sa'i appears to mean "child-bearing"; thus, *ŋą sa'i po*, "she is with child"; *wimo ŋą ɬǫ̨i ŋą sa'i po*, "while she lived single she conceived". Formerly a woman used to call her son's wife *ŋǭbi 'e kaga* (meaning of *kaga* unknown) until she conceived, when she began to call her *sa'i*.

ja (New Mexican Tewa *ja'a*, relative of husband or wife). A man calls his wife's mother, sister, and all her clanswomen irrespective of age *ŋǭbi ja kwijo*, and his wife's father, her brother, and all her clansmen *ŋǭbi ja sẹŋo*. (Cf. *ja'a*, wife, and *sa'i* bride.) A woman gives these names to her husband's mother, sister, clanswomen, brother, clansmen, and father. The husband of the mother's elder sister, etc., if

called *taɗa* instead of *sǭjɨ̨ŋgi*, responds with *nąɗi 'e* instead of *nąɗi ja kwijo* and *ja sẹno*. See also *jija*.

FAMILIAR ILLUSTRATIONS

The reading of a list of terms is never very satisfactory, and it may be useful to add a brief outline of their relation to daily life.

Take the point of view of a Tewa girl, a member of the Corn clan, born and reared in one of the two Corn-clan houses at Hano. Nearest to her, in daily life, come the inmates of the house in which she lives. The nucleus of the household, the essential and permanent part of it, consists of men, women, and children of the girl's own clan. The center of the house is *nǫ'ɨmɨ̣i saja*, "our mother's-mother," the owner and dispenser of all stores and food-stuffs, the guardian of religious apparatus belonging to the clan, the director of household work, the person who gives orders—so far as orders are given at all in this easy-going tolerant society. Behind her looms the vague tradition of *nǫ'ɨmɨ̣i papa*, "our mother's-mother's-mother" deceased, and all *nǫ'ɨmɨ̣i saja'ɨ* to the remotest antiquity. Whatever *saja* does or enjoins on us is assumed to be exactly what they used to do.

Beside her stand *nǫ'ɨmɨ̣i mąmą̆'ɨ*, "our mother's brethren." The same general title applies to *nǫ'ɨmɨ̣i mąmą̆'ɨ* who are *saja*'s sons, and *nǫ'ɨmɨ̣i p'eɓe'ɨ*, *saja*'s brothers; and they are backed by the authority of all *nǫ'ɨmɨ̣i mąmą̆'ɨ*, the men of our clan, from time immemorial.

Mąmą̆'ɨ sleep, as a rule, at the homes of their wives (*nǫ'ɨmɨ̣i sa'i'ɨ*, "our brides"), but they are constantly coming in and out of this, which they call their own house. They take their places at meals here as a matter of course, invite visitors to eat, behave as hosts and masters of the house; though they do not (if they are married) contribute anything to the material support of our household, since they have to supply corn, meat, and wood to their wives' homes. Their claim to obedience is a religious one—they are "our *mąmą̆'ɨ* who go out to see the sun before us," who give us advice "how we shall live." They consecrate our seed-corn and

make prayer-feathers for us all at the Winter Solstice: their feather-boxes, dancing-clothes, weaving-tools, jewelry are kept in our house, and they borrow our finery and ornaments as a matter of right. We women "ought to be happy when we cook for our *mąmąʼį*, for our elder brothers, and for our sons-in law, to make them strong." Whatever *mąmąʼį* say is unquestionably right; *saja* is the only person who may ever criticize them, and she does so only on questions of practice, not of theory.

Next comes *nąbi jija*, "my mother," and her sisters *nąbi koʼoʼį*, married and unmarried. My eldest *koʼo*, generally called *nąbi kaʼje*, partakes somewhat of *saja*'s authority, gives out stores in her absence, buys and sells corn and meat, and knows where the masks are kept.

Then come the young people of my own generation; the children of my own parents, my elder sister and brother, *nąbi kaka* and *nąbi pipi*, and my younger brothers and sisters *nąbi tije;* and also the children of my *koʼoʼį*, whom I address generally as brothers and sisters but sometimes as *mąmą* or *koʼo*, and *koʼoʼe*, according to sex and seniority.

So much for my own clanspeople in the household. Besides, there are the men of other clans who are *nąʼįmbi*, *sǭjį̇ngiʼį*, "our bridegrooms," married to our clanswomen. These are the men who support, or should support, the household, bringing their yearly crops to their wives to be stored and administered by *saja*, killing sheep (if they have any), and bringing firewood at frequent intervals. They range from *tʻeĺe*, *saja*'s husband, who is quite a permanent, central figure in our household life, to the lately-acquired husband of my younger *koʼo*, who is still shy and sulky and inclined to shirk his duties, and must not be driven too hard for fear of a quarrel. *tʻeĺe*'s own mother and sisters are dead and he makes our house his home; although, if *saja* were to die, he might possibly go to live with one of his *mąmąʼe*, his clanswomen. His interests are identical with ours, for he too is fed and warmed by the contributions of our younger *sǭjį̇ngiʼį*.

Our *sǭjį̇ngiʼį* sleep in our house as a rule, but they spend much of the day in their own clan-houses; they have duties in the kiva

where their own clans "go in," but they also dance "to help our *mąmą'i*" in ours.

One among the *sǭjiŋgi'i*—*nąbi tada*, my father—stands in a close and tender relation to myself and my sisters and brothers. Although, in the opinion of the elder members of the household he is not so near a relation to me as are *mąmą'i*, my own clansmen, he seems to me personally nearer and dearer. *Mąmą'i* give advice, instruction, and reproof, not unmixed with teasing; whereas *nąbi tada* gives clothes, shoes, and toys, tells stories and sings to us children, caresses us and plays with us. He and my mother and my brothers and sisters and I form a little camp of our own, as it were, in the midst of the crowded household life; we sit together to eat and to talk, and sleep together on my mother's own sheepskins and blankets. My father likes to sleep with my little brother's head on his shoulder.

The other half of our clan inhabits the ancestral house from which our *saja*'s mother migrated many years ago. The old lady who presides over it is "a sort of sister" to our *saja*, and addresses her sometimes as "elder sister," *kaka*, sometimes as "mother's elder sister," *ka'je*. Her daughters and daughter's children call our *saja* sometimes *ka'je*, sometimes *saja*. We address their *saja* in the same way. The members of her household are our *matų'i*, and they ought to be our nearest friends; but there are times when a degree of coldness, or perhaps of jealousy, keeps us apart. Our *mąmą'i* are not very good friends with their *sǭjiŋgi'i*.

Outside our own clan we have four groups of relations with whom we come into almost daily contact.

One of these is my father's clan, in which all the men and boys, irrespective of age, are my *tada'i*, "fathers" (though my father's own brothers are my *tada'i* more particularly), and all the women and girls my *ki'ʷu'i*; they all visit familiarly in our house and we in theirs. More particularly, my father's mother is my *kuku*, who attended at my birth, cut the umbilical cord, and conducted the name-giving ceremony, Hopi fashion, and my father's own sisters are my *ki'ʷu'i* par excellence. Their house is a second home to me; they caress me, wash, comb, and cut my hair, improve my manners

and morals—my youngest *ki'ʷu* is modern enough to make clothes for me on the American sewing-machine. From time to time my sisters and I grind corn for them; and whenever my father gives clothes to us or to my mother, we make a formal presentation of wafer-bread and other food "to pay them." My brothers kill rabbits and pile snow for their *ki'ʷu'i;* when they are old enough they will go a journey to fetch salt for them. In old times their *ki'ʷu'i* would have danced with them when they took a scalp.

The second group of relations consists of our *'e sẹŋ* and *'e kwijo*, "men-children" and "lady-children"—all the children (whatever their clan) whose fathers are, or were, men of our clan—along with their mothers, our *sa'i'i*. They are our natural friends and playfellows, and they resort to our house just as we go to the house of our *kuk̆u* and *ki'ʷu'i*. *Saja* caresses and admires them, and shows them a more demonstrative affection than she shows to us, her own *saja'e*.

These two groups stand closest to us. More distant, but still familiar and friendly, is the clan of our mother's father, *saja*'s husband, in which we call all the men and boys *t'eĺe* and all the women and girls *t'eĺe kwijo*, "grandfather lady." Conversely there are individuals in various clans whose mother's father was of our clan; these (irrespective of age) are our *t'eĺe'e*.

Here the circle of familiarity, marked by the use of kinship-terms, ends so far as our own village is concerned. The rest are merely "the people," *îowa*, of doubtful friendliness, always capable of hostility, jealousy, and ingratitude toward us as a clan. Not that our *tada'i* and *t'eĺe'i* are always exempt from these failings—they often offend us or leave us in the lurch. But their defection is a definite grievance—"they ought to help us, because they are our *tada'i*" (or *t'eĺe'i*, as the case may be), whereas the rest of the people are almost normally disagreeable! *îowa to'a we di̤ mṳdi!* "the people are not good" is as common a saying with the Tewa as *Hópi ka Hópi* is with their Hopi neighbors.

Outside our own village we claim and recognize relationship with members of clans corresponding to our own. Thus we constantly welcome to our house and meals *nạ'imbi̤ k'osōn saja*, "our

Hopi mother's-mother," the senior woman of the Corn clan in Walpi. We have a *saja* at Tuba City, and a Navaho *saja*. *Mąmąʼį* —men of the clan—from all the Hopi villages visit us: they come to our house to eat and sleep; our women offer to wash and comb their hair, our men let them into good bargains. Our grievances against our fellow-villagers are discussed with them quite freely, and it is taken for granted that they will take our side of the question. Similarly, since my own father is of the Hano Cloud clan, I call a Cloud-clan man from Oraibi or New Mexico "father"; and as my mother's father is of the Bear clan, I call a Bear-clan man from any village *tʻeĥe*—not forgetting the members of linked clans who share these titles.

Deferring to another occasion the discussion in detail of the usages of kinship terms at Hano and the comparison of them with the usages of the New Mexican Tewa, I will briefly indicate their bearing on the regulation of marriage.

It will be convenient to take, again, the view-point of a Tewa girl.

There is no prescribed clan from which she must take a husband.

Her own clan is forbidden to her, and the mere suggestion of marriage with a clansman, even a conventional clansman from another village, gives her a very disagreeable impression. If her clan is one of a group of linked clans, marriage with members of the linked clans is equally forbidden. Thus a woman of the Tobacco clan at Hano could not marry a man of the Rabbit clan at Walpi.

Her father's clan, with its linked clans if any, is forbidden: she cannot marry any man whom she calls *taḍa*.

Her mother's father's clan is not forbidden: she can marry a man whom she calls *tʻeĥe*, or conversely, a man whose mother's-father was of her clan.

She cannot marry her *ʼe sę̣ŋ*, a man whose father was of her clan. That is, her brother's son, and her mother's brother's son, are barred.

She cannot marry a man who has the same *taḍa* as herself. Thus, she cannot marry her own father's son by another wife (and so of another clan); he is her "brother," *pi̥pi* or *tije*. She cannot

marry her own father's brother's son; he is her "brother," because they call the same men *taḍa*. Occasionally a girl marries her father's sister's son's son, but this is spoken of as an instance of modern license, for her father's sister's son is her *taḍa*, and therefore his son is her "brother."

It will be seen that by the Hano regulations three kinds of cousin-marriage are barred. Marriage between the children of sisters is barred by the prohibition of marriage within the clan. Marriage between the children of two brothers is barred because they have common *taḍa'i̯*. And marriage between the children of a brother and a sister is barred by the rule which forbids a woman to marry her *taḍa* or her *'e sę̣ŋ*.

This last rule is cited by the Hano Tewa themselves as the chief difference in custom between themselves and the Hopi, since cross-cousin marriage (between the children of a brother and a sister) is occasional at Walpi and Sichomovi, and regular in all the other Hopi villages. At the same time there are indications of a former Tewa custom of cross-cousin marriage, or, in other words, of the repeated and prescribed intermarriage of a pair of clans. When a boy baby is brought to visit in the house of his father's clan, he is loudly welcomed as the "husband," *sę̣ŋ*, of one of the girls of the clan, that is, of one of his *ki'ʻu'i̯*, whom by present-day custom he cannot marry. In the same way a girl baby is hailed as the "wife" of one of her *tada'i̯*. A woman speaks of her son's sons in jest as "our bridegrooms," *sǭji̯ŋgi'i̯*, as if they were expected to marry some of the girls of her clan. A man must "pretend to like" his father's sister's daughters and his father's sisters. (Similarly a woman must "pretend to like" the husbands of her father's clanswomen.) When a young man's approaching marriage is announced, his *ki'ʻu'i̯*, the women of his father's clan, are supposed to take it amiss; they "fight" one of his clanswomen and daub her with mud, or they visit his clan-house to "scold" and "talk queerly." A grown-up girl sometimes playfully warns-off other girls from her mother's brother's son, her *'e sę̣ŋ;* although she may not marry him, she half-seriously resents the advances of other girls toward him.

In a less degree a woman is expected to resent the marriage of a man who is her *t'eîe'e*, i. e., whose mother's father was her clansman: she affects a little coolness toward the young man's clan, threatens not to ask his sisters to her house, and so on.

The Tewa themselves give no explanation of these inconsistent usages.

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SUPERNATURAL BEINGS OF THE HURON AND WYANDOT[1]

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SUPERNATURAL attributes and power, in the ancient beliefs of the Huron and Wyandot, were ascribed to their mythological beings and to many varieties of charms and amulets.[2]

A brief description of two classes of deities and spirits being the object of this paper, we have here to pass over charms and amulets, as they were inanimate objects endowed with "power," and not necessarily connected with or derived from deities or spirits.

The mythical beings of the Huron and Wyandot pantheon may conveniently be classified into three groups, namely: (I) The primeval deities and the races of giants and dwarfs of their cosmogonic myths about the origin of the world; (II) the less homogeneous group of sky gods (Hamendiju, the Sun and the Moon, the Thunderers), also belonging to the religions of many foreign tribes, and accounted for in various ways by the Iroquois and Huron; (III) and the multiplicity of good and bad monsters—the *uki*—said to dwell everywhere and mingle with the Indian folks for their benefit or detriment. We shall restrict the present study to the primeval cosmogonic deities and the sky gods.

I

The primeval beings of the world, explicitly described in aboriginal cosmogonic myths,[3] belong to the following categories: The

[1] Published with the authorization of the Geological Survey of Canada, Ottawa.

[2] The charms and amulets, termed *aaskwandi*, were inanimate objects of queer appearance or origin, treasured on account of their reputed magical efficiency. Their fictitious value, according to Bressani, had its psychological origin in the "superstitious regard" of these peoples "for everything which savoured a little of the uncommon" (*Jesuit Relations*, Thwaites ed., vol. XXXIX, pp. 26–27).

[3] A version of the cosmogony has been recorded among the ancient Hurons (1632–5) by Father Brébeuf (*Jes. Rel.*, Thwaites ed., vols. VIII, pp. 117–119, and X, pp. 125–139). Brother Sagard, about 1615, had also noted down a few fragments of the same

superhuman people living in the Sky-world, before the creation of "the Island" (North America); the anthropomorphic animals of the inferior water-regions by whom "the Island" was made on the Big Turtle's back; the deities that fashioned "the Island" for the coming of the Indian peoples; and, last of all, the races of giants and dwarfs.

The pristine Sky-world, the ultimate origin of which remains unexplained, was the very picture of North America with its native inhabitants. Human-like people, to whom life and death were still unknown, were leading a peaceful existence in their villages, distributed all about the solid sky-land. At the head of their society were chiefs, seers, and shamans; and they depended mainly upon their fruit trees and the yield of their Indian corn patches for their subsistence. One day, a chief's daughter fell through a hole in the ground into the abysses of the inferior world, an immense sheet of water with no land anywhere. The reasons given as to why the Woman fell from the sky, being at variance, assume a slight importance. Some Oklahoma Wyandot were of opinion[1] that a shaman had brought about the accident by advising that they should dig into the roots of a tree where a medicine could be found that could cure the young woman of a mysterious disease. The uprooted tree, in fact, fell through the ground into the lower world with the woman entangled in its branches. According to another opinion,[2] a young woman used every day to gather a basketful of corn for her brothers. Having grown tired of her task, she destroyed the corn patch; and, as a punishment for having thus ruined

traditions (*Hist. du Canada*, Tross ed., pp. 448, 451–455). The two fairly extensive versions published by Schoolcraft (*Oneôta*, pp. 207–211) and H. Hale (*Jour. Am. Folk-Lore*, vol. I, pp. 181–183) were secured in the course of the last century among the Wyandot of Anderdon reserve, along the Detroit river, Ontario. Recently, still more extensive versions have been recorded among the Kansas City and Oklahoma Wyandot by W. E. Connelley (*Jour. Am. Folk-Lore*, vol. XII, no. XLV, p. 199; and *Wyandot Folk-lore*, pp. 67 and following), and by myself (the two versions of Mr B. N. O. Walker and Mrs Catherine Johnson, 1911 and 1912, are soon to be published by the Anthropological Division of the Geological Survey of Canada).

[1] Related in Connelley's version, and also in that of Mr B. N. O. Walker, taken down by myself.

[2] Catherine Johnson, Wyandotte Reservation, Oklahoma; recorded by myself in 1912.

their subsistence, her brothers cast her into the Underworld, through an opening. Father Brébeuf has left us two other explanations that he noted among the ancient Huron; the woman was said, in the first, to have cut down the tree "from which those who abode" in the sky "obtained their food," and, out of grief, to have thrown herself after the tree into the abyss. It appears, in the second version, that the woman fell into a hole while chasing a bear, and dropped into the lower regions. It was also suggested by some other informants[1] that, by mischance, the woman had been pushed by her husband into a rift in the sky, and had thus fallen from above.

In the dark regions of the Underworld there was no land anywhere. At first, the only inhabitants of that vast sea were human-like water-fowls and quadrupeds that lived in the water. Some water-fowls[2] rescued the falling Sky-woman and held her above the waters, while a council of the animals assembled and decided that a land should be made on the Big Turtle's back for the Woman to live upon. Otter, Muskrat, Beaver, and all the best Divers perished in their futile attempts to secure some of the earth clinging to the roots of the sky-tree lying at the bottom of the sea. The obscure and ridiculed Toad was the one that finally succeeded and brought back a mouthful of earth, with which "the Island" (North America) was made. It is believed by some that the Little Turtle[3] made "the Island" by rubbing and spreading the earth around the edge of the Big Turtle's shell until it had become a large island. The Woman, according to others,[4] sprinkled the grains of earth at arm's length on the Turtle's back and soon found that land was growing about her.

But there was no light on "the Island." The animals decided in a council to send the Little Turtle[5] on a cloud, into the sky, so

[1] Wyandot of Anderdon Reservation, Ontario, to Horatio Hale (*Jour. Am. Folk-Lore*, vol. I, p. 181).

[2] Geese or swans, according to two Wyandot informants, and loons or seagulls according to others.

[3] In W. E. Connelley's *Wyandot Folk-lore*, pp. 68–69, and Mr B. N. O. Walker's versions (recorded by myself in 1911, at Wyandotte, Oklahoma).

[4] Catherine Johnson's version (recorded by myself at Wyandotte, Oklahoma). H. Hale in *Jour. Am. Folk-Lore*, vol. I, p. 181.

[5] The "Prairie Turtle" or "Terrapin," it is likely.

that she could make some luminaries there. So it was done;[1] and the Little Turtle fashioned the sun out of flashes of lightning and, having made him a living being, she gave him the moon to wife. As they were meant to travel from east to west along a path in the sky, they found their way back to their starting-point, in the eastern sea, through a vast passage that the Mud Turtle[2] had dug for them, under the earth. In the course of ages they had many children, the Stars "that run about the sky." The Sun and Moon quarreled one day, and the Sun so badly abused the Moon that without the Little Turtle she would have forever wasted away. The phases of the Moon are explained as periodical relapses into the original state of prostration that followed her disgrace; and the annual decline of the Sun[3] seems to be a punishment inflicted by the Little Turtle upon him for his rash deed. The Little Turtle, therefore, has always been known as the "Keeper of the Sky."

Some time after the making of "the Island" and the luminaries, a number of land animals and birds—the Deer, the Wolf, the Bear, the Hawk, and others—are mentioned as taking part in the animals' councils. Nobody now can tell where they were from.[4] It is also believed that, after memorable adventures, during the early ages, they were led by the Deer into the sky, where they still have their abode.

When the Woman fallen from the sky began to wander about the Island she found an old woman,[5] who became her guardian,[6]

[1] The creation of the Sun, Moon, Stars, and underground Passage is explained only in two Wyandot versions of the cosmogony—those recorded by Mr Connelley and by myself.

[2] The subterranean passage is said to have been made by the Mud Turtle, in Connelley's account (*Wyandot Folk-lore*, p. 31), and by the Little Turtle in that of Mr Walker.

[3] This can only be inferred from Mr Walker's version when compared with some Iroquois explanations of the same phenomenon.

[4] The many illogical points to be found in these cosmogonic myths are generally due to the fact that the versions obtained were mere fragments. When some informants were pressed for more rational explanations by Father Brébeuf, they replied that they did not know any more than they had learned from their forefathers.

[5] This is in conformity with the old-time custom of these Indians of secluding grown-up girls for a certain period, during which they were daily visited by an old woman, termed "grandmother."

[6] The Iroquois myths generally have it otherwise, that is, the woman fallen from

and whom she called her "grandmother." Soon twins that had been mysteriously begotten in the sky came to the Sky-woman. One of the twins, out of mere spite, killed his mother, as he came into this world, by tearing his way through her arm-pit.[1] After her burial, cereals sprang from the various parts of her body, for the future use of the Indians: "from her head grew the pumpkin-vine; from her breasts, maize; from her limbs, the beans and other useful esculents."[2] Of the twins one was good and the other evil. The first was called *Tijuskâ'a*,[3] "the Good One," and the other, *Taweskare*, "Flint." The good one is also called *Tse'sta*, among the Oklahoma Wyandot. The old woman raised them just as if they had been human children. While Tse'sta's good nature was constantly developing, Taweskare's evil disposition was becoming more emphatic, until the time came for them to fulfill their mission on "the Island," that is, to prepare it for the coming of man. It appears, in certain traditions,[4] that the Twins, in order possibly to avoid conflict, divided the land between themselves. Tse'sta secured the eastern and Taweskare the western lands, wherein they were both to utilize their creative powers. According to another opinion[5] it was understood that they were to work in turns over the same territories. After a time, however, the Bad One went out west to vent his wrath unhampered. All are agreed that each of the Twins had an opportunity to inspect his brother's creations and reduce to a certain extent their good or bad qualities. Thus the Good One made the surface of the earth smooth or with slight

above gave birth to a daughter, who died at the birth of her own children, the Twins. Sagard's version, recorded among the ancient Huron, implicitly refers to a similar tradition (*Hist. du Canada*, pp. 451–2).

[1] Schoolcraft, *Oneóta*, pp. 207–211; H. Hale in *Jour. Am. Folk-Lore*, pp. 181–183; and Mr Walker's version.

[2] H. Hale (*Jour. Am. Folk-Lore*, vol. 1, pp. 181–183). Schoolcraft's version: The woman's body was laid upon a scaffold, and "from the droppings of her decay, where they fell on the ground, sprang up corn, tobacco, and such other vegetable productions as the Indians have" (*Oneóta*, pp. 207–211).

[3] This is the phonetic equivalent in modern Wyandot of the same name Jouskeha or Juskeha, as recorded by the early missionaries.

[4] H. Hale (*Jour. Am. Folk-Lore*, vol. 1, pp. 181–183), Connelley (*Wyandot Folk-lore*, p. 74).

[5] That of Mr Walker.

undulations, with park-like woods, rivers with a two-fold current running in opposite directions, so that the Indians might travel without paddling. He lavishly created berry patches loaded with berries, trees with large and juicy fruits, the maple, the sap of which was like syrup, Indian corn with a hundred ears on each stalk, and bean-pods growing on trees and long as the arm.[1] The Bad One following his brother, sadly damaged all these things. He tore up from every river its returning current, remarking, "Let them at least have to work one way up stream."[2] He covered the surface of the earth with flints, bowlders, and rocks, pulling up huge mountains here and there, and obstructing the land by means of marshes and thick forests strewn with vines, thorns, and brambles. He also spoiled the fruit trees by scattering them far apart and making the fruits and berries small, stony, and sour. The Good One had brought forth gentle game animals for the people, and large fishes without scales; but his wretched brother covered the fish with hard scales, and imprisoned the animals in a cave, frightening them and making them wild. Besides, he made fierce animals that were to be the enemies of mankind, and monsters of all kinds with which the earth has ever after been infested. He made an immense Frog[3] that drank all the fresh water of the earth. The only thing that the Good Twin could do was to reduce the extent of such evils. He released the animals from the cavern, and drew the water forth by cutting the frog open, or simply making an incision under her arm-pit, after having overcome her.[4] On account of lack of space here, we have to pass over the memorable deeds of the twins, who spent long ages at their work of fashioning the earth for the coming of man. In the end the Good Twin brought the Indian man forth; some say that he created him outright, while others[5] think that he

[1] These last details, found in Connelley (*Wyandot Folk-lore*, pp. 74 and following) are at variance with the traditions that Schoolcraft and Hale noted down among the Anderdon (Ontario) Wyandot, to the effect that the cereals and tobacco sprang from the various parts of the woman's body after her burial.

[2] H. Hale (*Jour. Am. Folk-Lore*, vol. I, pp. 181–183).

[3] A frog, in Brébeuf (*Jes. Rel.*, Thwaites ed., vol. X, pp. 125–139); and a toad, in Hale (*Jour. Am. Folk-Lore*, vol. I, pp. 181–183).

[4] *Jes. Rel.*, ibid.; H. Hale in *Jour. Am. Folk-Lore*, vol. I, pp. 181–183.

[5] Connelley, *Wyandot Folk-lore*, p. 80.

simply brought the Huron and Wyandot peoples down from the Sky-world. He instructed them in all kinds of useful pursuits, showed them the art of hunting, and gave them good advice for their religious and civil welfare.[1] Taweskare, for his part, called forth all kinds of human beings, generally bad and unfriendly to Tse'sta's peoples.

The everlasting opposition between the Good and Bad Twins finally developed into actual strife.[2] It is said[3] that Taweskare made the flinty giants to wage war against his brother, and that Tse'sta, on his side, made the dwarfs to stand on his behalf. After a lengthy contest, in which both artifice and strength were used, the Good One outwitted his brother and slew him with sharp deer-horns.[4] During the following era, Tse'sta left his people in the great cavern with the ghost of the Woman fallen from the sky at their head; and he went all over the earth, restoring as well as he could the ruin caused by his war against his brother, and making the world ready for the Indians.[5] In a modern addition of the myth, he is said to have come across the God of the white man near the mountains. A dispute arose between them about the possession of these domains. Tse'sta, however, defeated the invader in a magical contest and frightened him away.[6] When he returned from his wanderings, he found the old woman, his grandmother, "in ill humour, as she always was," for she "hated him and loved his brother, whom he had killed. He, therefore, . . . cast her up, and she flew against the moon, upon whose face traces of her are still to be seen."[7] The earth being now ready, Tse'sta went to the

[1] *Jes. Rel.*, vol. x, pp. 125–139. Finley, Rev. J. B., *Life among the Indians*, p. 291. Schoolcraft, *Onćóta*, pp. 207–211.

[2] Brébeuf, *Jes. Rel.*, ibid.; Schoolcraft, op. cit.; H. Hale, in *Jour. Am. Folk-Lore*, vol. 1, pp. 181–183. Connelley, *Wyandot Folk-Lore*, p. 80. Walker's version, recorded by myself.

[3] Connelley, *Wyandot Folk-lore*, p. 91.

[4] In the Schoolcraft version it is said that the Twins decided that one had to get rid of the other in some way, but without direct violence. The Good One finally won a race over his brother and caused him to fall on sharp buck-horns, after which he despatched him (*Onćóta*, op. cit.).

[5] Connelley, *Wyandot Folk-lore*, p. 81 et seq.

[6] Finley, *Life among the Indians*, p. 328. Schoolcraft, op. cit.

[7] Schoolcraft, *Onćóta*, op. cit.

great cavern or Underworld, and spoke to the Woman, their leader. She replied to him, "My son, lead them forth in the Order of Precedence and Encampment. . . ."[1] And he led the tribes to the cave's entrance, where they had their first view of this world. The voice of Hino, the Thunder, shook the air; but they were told not to be afraid, for lightning was never to strike a Huron.[2] And, scattering in various directions, they established their villages about the land.

Let us now consider for a moment the Huron and Wyandot beliefs regarding the fate of these cosmogonic deities. The sky is said to be still inhabited by the people from whom the fallen Woman proceeded; and the human-like animals of the pristine Water-world are described as having ascended, after the Deer, and with the assistance of the Rainbow, into the celestial regions of the Little Turtle, where they are still supposed to be.[3] The Big Turtle, however, remained under "the Island," and she is still there holding it upon her back; so that whenever there is an earthquake, some of the old Wyandot may still be heard saying, "Well! the Big Turtle has been shifting her position. She must have moved a paw!"[4] It is interesting to note, besides, that the Big and Little Turtles,[5] and perhaps also the Mud Turtle—who appears to have made the subterranean passage for the Sun and the Moon[6]—being the totems of three Huron and Wyandot clans, are supposed to have extended their protection to their human protégés almost to the present day. The Deer, the first of the animals to climb into the Little Turtle's sky-land, is also the totem of the Deer clan, the head clan of one of the phratries.

The fate of the higher divinities, Tijuská'a (or Tse'sta), Taweskare, their mother and "grandmother," and of the dwarfs and giants, is somewhat more obscure, owing to various traditions that

[1] Connelley, *Wyandot Folk-lore*, p. 82.

[2] Walker's version.

[3] Sagard, *Hist. du Canada*, pp. 451–452. Brébeuf, *Jes. Rel.*, op. cit. Connelley, *Wyandot Folk-lore*, p. 77. Walker's version.

[4] Connelley, *Wyandot Folk-lore*, p. 45. Mr Walker's version.

[5] Apparently the "prairie turtle" or "terrapin."

[6] Connelley, *Wyandot Folk-lore*, pp. 31, 77.

are slightly at variance. After Taweskare had been slain by Tse'sta, his ghost reappeared at night, and after he was refused admission by his brother, he was heard saying: "I go to the northwest and you will never see me more, and all who follow me will be in the same state. They will never come back. Death will forever keep them."[1] Taweskare is stated in another tradition[2] to have gone to the far west and to have said "that thenceforth all the races of man would go to the west, like him." "And," added the informant, Clarke, "it is the belief of all the pagan Indians that, after death, their spirits will go to the far west and dwell there."

The Woman fallen from the sky, mother of the Twins, is the first one who was known to die in this world. It is not easy to distinguish her personality from that of the old woman, her "grandmother," who took care of her and the Twins, in "the Island." In some traditions her spirit is said to have appeared to Tse'sta and revived him when he was about to be defeated in his contest with Taweskare.[3] She is found, later, at the head of the sleeping Wyandot, in the Underground world; and when her son, Tse'sta, announced that the earth was ready for the Indians, her parting words were, "My son, . . . they shall come to me on their journey to the Land of the Little People"[4] (that is, the land of the dead). Her domains, therefore, are the regions whither the human souls repair after death, and with the care of which she is intrusted.[5]

Some time after the coming of man into this land, Tijuská'a (or Tse'sta) and his "grandmother" established their abode in a remote country somewhere,[6] most say in the far east,[7] and some in the middle (of the sky).[8] Traditions have been recorded among the ancient Huron to the effect that a man named Attiouindaon and, later, four adventurous young men had visited the home of these

[1] Schoolcraft, op. cit., pp. 209–10.

[2] H. Hale, in *Jour. Am. Folk-Lore*, vol. I, p. 180–183.

[3] H. Hale, ibid.

[4] Connelley, op. cit., p. 82.

[5] Sagard, op. cit., p. 450. Brébeuf, op. cit. Connelley, op. cit., p. 46.

[6] Sagard, op. cit., pp. 451–452.

[7] Brébeuf, *Jes. Rel.*, vol. VIII, p. 119, and vol. X, pp. 125–139. Connelley, *Wyandot Folk-lore*, pp. 48–49.

[8] Brébeuf, *Jes. Rel.*, vol. VIII, p. 119.

divinities near the eastern sea.[1] In fact, it was the current belief that these beings are "human and corporeal"; that they live in bark houses like the Indians, sow and reap corn and other things, sleep, eat, and are subject to all the necessities of human life.[2] It seems that Tijuská'a was until recently considered as the living providence of the Huron and Wyandot; for it was he "who gives them the wheat [Indian corn] to eat; it is he who makes it grow and brings it to maturity. If they see their fields verdant in the spring, if they reap good and abundant harvests, and if their cabins are crammed with ears of corn, they owe it to Jouskeha."[3] He was considered, indeed, as a benefactor who takes care of the Indians and all that pertains to their livelihood.[4] He has even been called by some one[5] "the God of Forest or Nature." He was far, however, from being granted unlimited and absolute power over things; and Sagard states that the Huron readily admitted that the Christian God seemed to have greater powers than Juskeha, who, in his remote country, was not exempt from the vicissitudes of human life. He was also said gradually to grow old, but without losing any of his vigor, and from time to time to transform himself into a young man of about thirty years of age, thus not being subject to the fatality of death.

The personalities of the "grandmother" and the Woman who died at the birth of the Twins, have long been somewhat confused. The spirit of the deceased woman seems to be in charge of the souls in the Underworld, while the grandmother is stated in most traditions to be living the in east, with her grandson Tijuská'a. It is stated, however, that the grandmother is wicked, because she often spoils the good things done by her grandson, and that she is the one who causes men to die.[6] Although they play an important part in the affairs of man, these divinities have never received any very marked form of worship, notwithstanding the fact that the Huron, accord-

[1] Sagard, op. cit.

[2] Sagard, op. cit., pp. 451–452. Brébeuf, *Jes. Rel.*, vol. VIII, p. 119, and X, pp. 125–139.

[3] Brébeuf, *Jes. Rel.*, vol. X, pp. 125–139.

[4] Sagard, op. cit., pp. 451–452. Brébeuf, *Jes. Rel.*, vol. X, op. cit.

[5] P. D. Clarke, an educated Wyandot of Anderdon, Ontario.

[6] Sagard, op. cit., pp. 451–452. Brébeuf, *Jes. Rel.*, vol. VIII, p. 119.

ing to Brébeuf, esteemed themselves greatly obliged to Tijuskà'a, and that he was supposed to be present with his grandmother at the feasts and dances that took place in their villages.[1]

Tijuská'a has sometimes been said by the natives and by ethnologists[2] to be the sun, and the Woman the moon. It may be due to the fact that, among the Iroquoian peoples, as well as among many foreign tribes, the sun and the moon have long been considered as high divinities connected with nature and the seasons, and have been worshiped as benefactors. It is not surprising, therefore, that the Huron and Wyandot should occasionally have assimilated them with their national deities, to whom their mythology ascribed similar functions.[3]

The dwarfs and giants are described in one cosmogonic version[4] as having been created by Tse'sta and Taweskare on the occasion of their feud. It seems likely, however, that the connection of the giants and dwarfs with the cosmogony was but slight and not generally acknowledged, their origin being probably ascribable to other sources. In fact, similar beings are known in several American mythologies at large.

According to an Oklahoma Wyandot informant,[5] the dwarfs were of two varieties: the Tikę'ą and the Kahiñǫ'ą. The Tikę'ą, or Little People,[6] are said, in one version of the cosmogony, to have assisted Tse'sta in his war against his brother and the giants, and then to have gone to the world of souls in the west. They are believed to have extended their protection to the Wyandot on several occasions; for instance, when they helped them in chasing away the Stone giants and destroyed the Witch Buffaloes that were the calamity of some Kentucky springs.[7]

[1] Sagard, ibid., pp. 553–555. Brébeuf, *Jes. Rel.*, vol. x, pp. 125–139.

[2] Cf. Brinton, *American Hero-Myths*, Phila., 1882, pp. 53–62, and *Myths of the New World*, 3d ed., pp. 156ff., 203–205; Parkman, *Jesuits*, pp. lxxv–lxxxvii.

[3] Cf. *Zeitschrift für Ethnologie*, 45 Jahrgang, 1913, Heft I, pp. 64–71.

[4] Connelley, *Wyandot Folk-lore*, p. 91.

[5] Mrs Catherine Johnson; information collected by myself.

[6] Connelley in *Jour. Am. Folk-Lore*, vol. XII, p. 124, and *Wyandot Folk-lore*, p. 81, 82, 86; and information collected by myself among the Lorette Huron and Oklahoma Wyandot, the informants being F. Groslouis (Lorette), Mrs I. Walker, Mrs C. Johnson, Mary Kelley, and others (Oklahoma).

[7] Connelley, *Wyandot Folk-lore*, pp. 91, 92.

The dwarfs were extremely small and old beings, and their bodies resembled those of human creatures. They are stated by some to have now become invisible.[1] Although powerful and witch-like, they are good-natured and are not known to have ever done any harm to the Huron or Wyandot. Their ways of living are those of human beings. They are dressed with clothes made of hide and woven hair, carry their children on tiny cradle-boards, and especially enjoy singing and dancing.

The Kahiñǫ'a have ducks' feet, and arms without joints in the elbow. They are benevolent; and, in one instance recorded, a dwarf woman is said to have appeared to a hunter, in a hollow tree, and to have given him a charm for good luck in hunting. That she was very old is shown in a discussion that she had with the hunter:[2] "You are extremely small!" said he, "You must be very young!" But she retorted, "No! I am really much older than you." He could not believe her, as she was so very small. Then they talked about things of the past, things that had happened long ago. She told him all about events long since forgotten, which he had never heard of. She truly believed herself much older than he. But he would not admit it. "Do you remember the time," asked she, "when this earth was drowned?" And he inquired where the people went while the earth was covered with water. She explained that they had climbed up into the cliffs.

These little beings are said to have left marks and traces of all kinds on rocks, and are believed sometimes still to be heard singing and dancing in caverns or under the ground. Footprints may still be seen on rocks at Lorette (Quebec), which the Huron ascribe to dwarfs. And a number of Oklahoma informants speak of several localities either near Kansas City, or near Wyandotte, Oklahoma, where they have recently heard the dwarfs singing and dancing, and the beating of their water-drums, or have seen on rocks marks of their feet, arms, hands, and bows and arrows.

The giants, or *Strendu*, the averred enemies of the Wyandot,

[1] Mrs C. Johnson and Catherine Armstrong (Oklahoma Wyandot); information collected by myself.

[2] From a Wyandot text of Mrs C. Johnson (Oklahoma Wyandot), recorded by myself, in 1912.

were dreaded on account of their extraordinary size and powers. Some[1] describe them as being half-a-tree tall and large in proportion. Their bodies were covered all over with flinty scales, which made them almost invulnerable. When the Wyandot, perchance, surprised one asleep, they would kill him with linn-wood pillows, or shoot their arrows in the monster's arm-pit. The Indians are reported, one day, to have discovered a giant woman sleeping along the shore of a lake; they had detected her, in fact, by the ripples on the surface of the water caused by her breathing. When a large party of warriors slew her by means of linn-wood pillows, the shore of the lake was strewn with the large flint scales that covered her body.[2] In another story a giant woman is reported as having walked on the bottom of a river instead of swimming. Upon reaching the shore, she spat on an axe forgotten there by an Indian, thus unconsciously making it magical, in such a way that it could pulverize large bowlders at one blow.[3] These monsters were cannibals, and in the old time it sometimes happened that the terrified Indians would take their flight to the woods on having detected the presence of a giant in their neighborhood. The fingers of their human victims were the charms that the *Strendu* used to detect the presence of other Indians, as is shown by the following extract from a legend:[4] "The *Strendu* knew that some people were to be found there, as she could smell them. She therefore placed a human finger on the palm of her hand, and whispered, 'Where are the people?' and at once, the finger stood straight up, pointing to the tree in which a man had hidden. The giant, however, did not believe the finger, and said, 'I have never known of any people living up in the sky. . . .' So she threw the finger away, thinking that it had been spoilt and was no longer good for anything." The fate of these giants is a mystery to the modern Wyandot. They are still living somewhere, so it is believed. An old informant[5] thought that they must be in the east, "where the Indians originated," for "nobody knows what they have now become."

[1] Connelley, *Wyandot Folk-lore*, p. 91.
[2] Informant, B. N. O. Walker.
[3] Informants, Catherine and Allen Johnson.
[4] Informants, Catherine and Allen Johnson.
[5] Catherine Armstrong, Wyandotte, Oklahoma.

II

The sky gods, *Hamendiju*, Sun and Moon, and the Thunderers, occupy a prominent place in the pantheon of all the Iroquoian tribes, and, indeed, with the exception of *Hamendiju*, they appear in some form or other in the mythology of a large number of American peoples.

Hamendiju (in Wyandot), or *Hawenniyu* (in Iroquois), is the chief deity of the modern Huron and Iroquois. His name may be translated literally "His-voice-is big or powerful," and it may be interpreted "He is a great chief." There seems to be little doubt that this is a name coined by the natives for the God of the white man; although some of the present-day informants readily accept that "the Great Spirit," Hamendiju, is one of their aboriginal deities.[1] In fact, the name of Hamendiju or Hawenniyu is, so far as we are aware, unknown in the narrations of earliest missionaries and explorers. When they mention the highest or most popular Huron or Iroquois divinity, their terms refer, in most cases quite evidently, to the Good One, as described in the cosmogonic myths, or to the Sun and to Areskwi.[2] Father Brébeuf, for instance, relates that the Huron "had recourse to the Sky in almost all their necessities"; "for they imagine in the Heavens an Oki, that is to say a demon or power which rules the seasons of the year." When the Sky is angry with them, as it often happens, "the flesh of a dead man is the victim" which they immolate in order to appease the Sky.[3] Another missionary states that a great magician, consulted on the subject of the coming harvest, had answered "that it was necessary that everyone should go every day to his field, throw some tobacco on the fire, and burn it in the honour of the Demon whom he consulted, calling aloud this form of prayer, 'Listen, O Sky! Taste my tobacco; have pity on us' . . ."[4] It is quite clear that the so-called Oki or Demon thus spoken of was no

[1] Miss Mary McKee (Anderdon, Ont.); Star Young (Wyandotte, Okla.).

[2] Areskwi is apparently an ancient name for the same cosmogonic god among some Iroquois tribes. Cartier noted, perhaps erroneously, that Cudwagny was the name of the supreme being of the natives found at Hochelaga (supposedly the Mohawk.)

[3] *Jes. Rel.*, 1636, vol. X, pp. 159, 163, 165.

[4] *Jes. Rel.*, 1642, vol. XXIII, p. 55.

other than the Good Twin of the cosmogonic myths to whom are ascribed the regulation of the seasons and the growth and ripening of the cereals and fruits of the earth.

In the modern Wyandot beliefs, Hamendiju is the "Almighty" or "Great Spirit" dwelling in the sky[1] and controlling the whole world. "He is the Great Man above," explained an old informant;[2] "He has all the powers, and he rules over many spirits who obey his commands." His chief assistant is Hinǫ, the Thunderer.[3] In recognition of his benevolent nature and of his daily favors to mankind he is prayed to and worshiped, in the course of periodical and special rituals, performed in public, and accompanied with the burning of Indian tobacco as incense, and certain motions of the hand toward the sky. Among the thanksgiving rituals in his honor, the Green Corn feast, taking place in August, has long occupied an important place. Several private and semi-private rituals are addressed to him on several occasions, namely, before starting for the hunt or when gathering medicinal plants. It is interesting to note that while Hamendiju is often directly prayed to, in the modern formulas used when plucking up medicinal or magical plants, various terms of relationship are also used to address him, such as "Cutá'a" (term including male and female ancestors, and generally translated "grandfather" or "grandmother" by the natives), and Sǫmą'ístę, "our father."[4]

The chief deity of the modern Iroquois is also known under the name of Hawenniyu or Rawenniyu, and he is, in several places, described as the Good Twin who, with his brother, created the world.[5] The Handsome Lake doctrine[6]—which has swayed most of the unchristianized Iroquois, during the last century—accepts Hawenniyu as the "Almighty" and also lays much emphasis on

[1] Smith Nichols, Catherine Johnson (Wyandotte, Okla.); Mary McKee (Anderdon, Ont.), and others.

[2] Star Young (Wyandotte, Okla.).

[3] H. Hale, "Huron Folk-lore," in *Jour. Am. Folk-Lore*, vol. IV, pp. 293–294.

[4] Catherine Johnson and Mary Kelley; Smith Nichols and Allen Johnson; Star Young; and Mary McKee.

[5] L. H. Morgan, *League of the Iroquois* (1904 ed., by H. M. Lloyd), p. 147. A. C. Parker, "Iroquois Sun Myths," *Jour. Am. Folk-Lore*, vol. XXIII, pp. 474–478.

[6] Morgan, loc. cit., p. 217ff., and A. C. Parker, "The Handsome Lake Code," *Bulletin New York State Museum*, No. 163.

the existence of an Evil Spirit, along the lines suggested by Christian theology. Both in their public and private rituals they address Hawenniyu, thanking him for his favors and praying to him for their continuance.[1]

Among the foremost deities of the ancient Iroquoian religion were the Sun and the Moon. To the Wyandot they were human-like beings, gifted with extraordinary powers, as we have seen above. The Little Turtle, appointed by the council of the pristine animals, had made the Sun out of lightning and had given him the Moon to wife. They were both meant to shed light in turn upon the "Island" and in the Underworld. The Stars were said to be their children; and, among the favorite constellations were the Pleiades, supposed to be their "six little girls, the daughters of a single birth."[2]

The Sun—although still remembered among the Lorette Huron[3] as the chief of the old-time spirits—does not seem to have been granted so high a rank in the Wyandot rituals as in those of the Iroquois. Besides the alleged confusion of the Sun with the Good Twin, and the Moon with his grandmother, there is nothing to show that among the ancient Huron the Sun and the Moon enjoyed any marked form of worship.

The Iroquois lore about the Sun and the Moon is far richer and more confused. Several traditions have come down to us regarding their mythical origin and function. Teharonyawagon, the Good One of the Twins, is said[4] to have made the Sun while he was preparing the island for mankind, and later to have rescued him from the thievish hands of his evil brother who had captured him. The old woman appears, in another version,[5] to have "cut off the head of her daughter and affixed it to the top of a tall tree, where it became the Sun, and, in like manner," to have "affixed the body which became the Moon." "At a later period," it is further al-

[1] Mr F. W. Waugh has collected for the Anthropological Division of the Geological Survey of Canada many formulas used in gathering medicinal plants, in which Hawenniyu is directly addressed and prayed to.

[2] W. E. Connelley, *Wyandot Folk-lore*, p. 109.

[3] Informant, Rev. P. Vincent (Lorette, Q.).

[4] J. N. B. Hewitt, in *Proc. Am. Asso. Adv. Sci.*, 1895, pp. 241–242.

[5] Hewitt, ibid.

leged, "these two luminaries were placed in the Sky." In a sun myth[1] it is related that the Good One made the Sun out of the face of his deceased mother. There is still the following explanation given as to the origin of the sun: In the sky-world, a chief ordered, one day, that the "light-giving celandine tree" should be uprooted; an opening to the sky thus resulted, and it is claimed that the Sun, after the fall of the Woman from the sky, has since been shining through it.[2] In a fragment of the Iroquois cosmogony,[3] the Sun is seemingly acknowledged, moreover, as the father of the Good and Bad Twins; and the grandmother, speaking to the Good-minded said,[4] "Now you must go and seek your father. When you see him you must ask him to give you power." Pointing to the east, she said, "He lives in that direction. You must keep on until you reach the limits of the island; and when, upon the waters, you come to a high mountain rising out of the sea, you shall climb to its summit, and you will see a wonderful being sitting on the highest peak. You must say, 'I am your son!'" And the context, according to Mr A. C. Parker, shows the Sun to be the "wonderful being." The Sun is often represented as the witness of all human deeds, and as a war god, to whom the warriors return thanks for their victories.[5] Father Bressani, made prisoner by the Iroquois in one of their encounters with the Huron, has recorded that the Iroquois, after their victory, "rendered thanks to the Sun, . . . which they believe to preside in wars."[6] Certain adventurous young men are elsewhere reported[7] to have traveled far westward and followed the Sun into the other world, as he passed under the western sky's rim. In the other world, they met "a person of great size," [8] that is, Hawenniyu. Then the brothers saw a messenger running toward them "with a

[1] A. C. Parker in *Jour. Am. Folk-Lore*, 1910, vol. XXIII, pp. 474–478.

[2] Hewitt, loc. cit., p. 245.

[3] A. C. Parker, loc. cit., being an extract of Esquire Johnson's version, recorded in manuscript by Mrs A. Wright, in 1876.

[4] Mr Parker's text is followed here almost verbatim.

[5] Parker, ibid., p. 478, and others.

[6] Bressani, *Jes. Rel.*, vol. XXXIX, p. 185; also Vimont and Lalemant, *Jes. Rel.*, vol. XXVI, p. 69.

[7] In Mr A. C. Parker, loc. cit.; informant E. Cornplanter; and in manuscript version recorded by Mr F. W. Waugh (informant Chief J. Gibson, Grand River, Ontario).

[8] In F. W. Waugh's version.

brilliant ball of light upon his wide chest." And Hawenniyu explained, "He is the Sun, my messenger. Every day he brings me news (from the earth). Nothing from east to west escapes his eye."[1]

There was evidently no orthodoxy among the Iroquoian peoples regarding the nature of the sun and the moon. Their high mythological importance, however, is clearly revealed in the traditions and also in the Iroquois sun and moon rituals. The divergences of opinion on their origin and function are, no doubt, partly due to the fact—already pointed out by Mr Parker[2]—that the Iroquois adopted, in the course of their wars, the remnants of several conquered tribes and assimilated their traditions. But it should not be forgotten that the sun is one of the foremost characters in the religion of many American tribes at large, especially in the West and Southwest. As it is more than likely, moreover, that the Iroquoian peoples formerly migrated from middle North America, and perhaps from the Southwest, their sun worship may turn out to be an ancient legacy which their modern thinkers have attempted, independently and without perfect agreement, to explain in their etiological myths.

The Sun dance—generally called "War Dance" by the Oklahoma Iroquois, although not quite appropriately[3]—is one of the fundamental Iroquois feasts. And the "Blackberry feast" is a ritual in honor of the Moon, held at the first full moon of July, and performed at night.

The Sun ritual, still performed on several Iroquois reservations, is fairly well known to ethnologists.[4] It was explained[5] to the writer, after having witnessed a Sun feast among the Oklahoma Seneca and Cayuga,[6] that the "dance" was intended as a returning of thanks to the Sun, whom they worship and call *Setwá'tsi'a*,

[1] Almost verbatim from A. C. Parker's "Sun Myths," loc. cit.

[2] Parker, ibid., p. 478.

[3] James Logan, the Cayuga head-chief of the Oklahoma Seneca and Cayuga (whom I utilized as informant), was emphatic in his assertion that the so-called "war dance," performed in September, 1911, was really a "Sun dance."

[4] Morgan, loc. cit., p. 175ff., and p. 268ff.; Mrs E. A. Smith, "Myths of the Iroquois," B. A. E. Rep. II, p. 114; A. C. Parker, loc. cit., p. 473.

[5] By the Cayuga head-chief, James Logan, and his wife.

[6] In September, 1911.

"our brother." "We speak to the Sun as if he were a spirit, and," added the informant, "the spirit is in the Sun in some way. Therefore we thank him for having given the Sun the power to protect us, and to cause all the plants to grow." The sacred Sun emblem and other paraphernalia are used by the dancers, who proceed from the east to their dancing grounds, and make their exit westward when the dance is finished. In the course of the same feast, the Sun, the Moon, the Thunderer, the Manitous, and the Earth are prayed to and requested to continue their favors, and to grant everybody life and good luck until the next Sun feast. In former times this ritual used to take place twice a year, in the spring and in the autumn.[1]

The Moon feast, also called "Blackberry dance" by the Oklahoma Iroquois, is held at night on the first full moon of July, when the blackberries are ripe. It is meant as a form of worship and a thanksgiving ritual to the moon, whom the informants called *Eti'sut*, "our grandmother," for her favors in shedding light at night, causing the dew and bringing the plants and cereals to maturity. It was also claimed by the same informants that this was mainly a woman's dance, on account of the moon being a woman and the grandmother of all the children born in this world.[2]

One of the most popular gods of the Iroquoian pantheon is Heno, the Thunderer. His personality, in fact, is well defined and his attributes appear to be almost uniformly the same throughout the various Iroquois and Wyandot myths.

His mythical origin seems to be more ancient than that of any of the other great deities above described. It is accounted for in a Wyandot myth, which may be summarized as follows:[3] Heno was one of seven brothers seemingly living in the sky-land,[4] long ago.

[1] This information was obtained from James Logan and his wife, or noted down directly by the writer.

[2] One of these feasts was witnessed by the writer at Seneca reservation, Oklahoma, in July, 1912, and later studied with the informants James Logan and wife.

[3] Informant B. N. O. Walker, Wyandotte, Oklahoma. Recorded by myself in 1911.

[4] That they lived in the sky-land is simply inferred from the fact that Heno is stated, in all the cosmogonic traditions, to have accompanied the Woman into the water regions, when she fell from the sky.

So exuberant with life and boisterous was he that his brothers were much worried about him, and even dreaded the idea of exciting his anger, lest he might indulge in rash and terrible deeds and destroy them all. He was so strong that, without even noticing it, he would smash things to pieces. One day, having decided to get rid of him, they brought him along into a remote island where they pretended to hunt deer. When Heno had taken his stand in a dense forest whither he expected his brothers to chase the game, they ran back to their canoes and left him there, all by himself. He soon realized their deceit, but accepted his fate without a grudge, as he was always jovial and good-natured. His voice, however, resounded like peals of thunder, as he called his brothers. Forgetting his grief, he promised them, in the end, that he would never do any harm to them and their people; but that, from time to time he would raise his voice and remind them of his presence on the island. In fact, he is believed to have stayed there to this day, roaming about a part of the year, and sleeping in the winter time. When a peal of thunder is heard in the winter, some Wyandot may still be heard saying, "Heno is turning over; something must have disturbed his nap!"

In the Wyandot and Iroquois cosmogonic myths Heno appears as the god of thunder and lightning. In the Wyandot myths it appears that when the Woman fell from the sky into the lower water-world, a mighty peal of thunder, the first ever heard in these regions, startled the aquatic animals. The Woman was then seen "clad in a bright flame of lightning." She was accompanied in her fall by Heno, the God of Thunder.[1] When, later, the council of the animals had decided that luminaries should be made to light the earth, Little Turtle climbed into the sky with the help of Heno and made the sun and moon out of lightning.[2] On several other occasions, in the course of the mythic ages, Heno and Little Turtle are found closely associated; for instance, in the epic war against the giants, Little Turtle said, "I can make a great fire from the lightning." So the warriors and Little Turtle crept all around the giants'

[1] W. E. Connelley, *Wyandot Folk-lore*, pp. 44, 77; and in Walker's version.

[2] Connelley, ibid., pp. 44–46, also in *Jour. Am. Folk-Lore*, XII, pp. 118–119; and Walker.

camp. The Turtle brought forth the thunder; and lightning leaped into a great wall all about the giants, crushing them to the earth.[1] And the Pleiades maidens, having one day deserted the sky for the earth, were brought back to their former abode by Little Turtle riding on a cloud, accompanied by Heno.[2] Before the animals had passed from the Island into the sky, it came to the Deer that he should be concerned with the celestial affairs. He therefore requested the Rainbow to convey him into the sky by means of his broad pathway of colors;[3] but it is said that the Rainbow would not do it without consulting the Thunder about the matter.[4] It was related that Heno assisted the deceased Sky-woman, when she was in charge of the Wyandot, as they were sleeping in the Underworld, just before their dispersion on the island.[5] Tse'sta, having called his people forth from the Underworld, showed them to the opening of the great cavern. While they were for the first time glancing over this world, a peal of thunder shook the air and frightened them all.[6] They were told, however, not to fear, for Heno would never cast his thunderbolts on a Wyandot. And it is still a firm belief among them that, being the privileged people of Heno, they may never be struck by lightning.[7]

Heno's manifold personality and function are described in a number of myths and legends of the Wyandot and Iroquois. Although primarily the Thunder god, whose powers are destructive, he is everywhere known as the real providence of the Iroquoian people. In his care are intrusted the clouds, with which he waters the earth; and he is believed, in fact, to cast his thunderbolts only at the enemies of the people—the monsters, witches, and evil-doers. For the fulfilment of his many functions, he is assisted by many subordinates, generally said to be his sons. Both as Thunder deity and rain-maker or God of vegetation he is worshiped and con-

[1] This incident is quoted almost verbatim from Connelley, *Wyandot Folk-lore*, p. 86.

[2] Connelley, ibid., p. 110.

[3] Walker's version.

[4] Connelley, loc. cit., p. 77.

[5] Connelley, ibid., p. 82.

[6] Connelley, ibid., p. 83; and Walker.

[7] Informant B. N. O. Walker.

sidered as good-natured and benevolent; and the vocative "grandfather" is the term by which he is generally addressed in prayers.[1]

His physical appearance, according to some Iroquois authorities,[2] is that of a human being, dressed as a warrior, and wearing upon his head a magical feather by which he is made invulnerable. Upon his back he carries a basket full of fragments of flint rock, to be flung at monsters and witches. In the less abundant Wyandot evidence we find Heno and his assistants "dressed in cloud-like garments, with wings on the shoulders," and floating in the clouds.[3] True enemy of the monsters—the *ukis*—and their human confederates, the witches and sorcerers, Heno destroys them whenever he happens to detect their presence.[4] That is why the ukis are said seldom to venture out of their caverns or their hiding places in the ground. Many incidents illustrating Heno's fury against monsters are found in literature, namely: Long ago the annual recurrence of a terrible pestilence, caused by a huge serpent dwelling under the ground, was the scourge of an Iroquois village situated at the place where Buffalo now is. Heno, out of compassion for the people, finally decided to slay the serpent. While the monster was in a creek near the village, "Heno discharged upon [him] a terrific thunderbolt which inflicted a mortal wound. . . . Before he succeeded in reaching the lake, the repeated attacks of the Thunderer took effect, and the monster was slain. . . . The huge body of the serpent floated down the stream, and lodged upon the verge of the [Niagara] cataract, stretching nearly across the river. . . . The raging waters thus dammed up by the body broke through the rocks behind. . . . In this manner . . . was formed the Horseshoe Fall" of the Niagara.[5]

[1] For the Wyandots: H. Hale in *Jour. Am. Folk-Lore*, IV, p. 292, Mary McKee and others (information collected by myself); for the Iroquois: J. N. B. Hewitt in *Proc. Amer. Asso. Adv. Sci.*, 1895, pp. 249–50; Mrs H. M. Converse in *Bull. N. Y. State Museum*, No. 125, pp. 39–42.

[2] Morgan, loc. cit., p. 149; Converse, loc. cit., pp. 39–40.

[3] H. Hale in *Jour. Am. Folk-Lore*, IV, 292–393.

[4] Morgan, loc. cit., p. 149; Hewitt. loc. cit., pp. 249–250; Smith, loc. cit., pp. 52–54; Converse, loc. cit., p. 39.

[5] Extracts quoted from Morgan's version, loc. cit., pp. 150–151; also recorded by Mrs E. A. Smith, loc. cit., pp. 54–55; Mrs Converse, loc. cit., pp. 39–42, and Minnie Myrtle, *The Iroquois, or The Bright Side of Indian Character*, p. 133; and referred to by Connelley, *Wyandot Folk-lore*, p. 44, as also found among the Wyandot.

In a legend recorded among the Wyandot of Detroit,[1] it is related that the Thunderer one day appeared to a young hunter, advising him that his old protector, for the benefit of whom he was hunting, was really a monster disguised as a man. Henǫ added that his own mission was, with the help of his assistants, to "keep the earth and everything upon it in good order for the benefit of the human race"; and, "if there were serpents and other noxious creatures," he was commissioned "to destroy them." So the young Indian lured his protector out of his subterranean dwelling. The old fellow, who did not like to go out, "bade the youth examine the sky carefully, and see if there were the smallest speck of cloud in any quarter." While the cave man was still in the woods, the thunder rumbled at a distance, and a cloud appeared. The old man ran away; but as the thunder sounded nearer, he became an enormous Porcupine. "But the Thunderer followed him with burst upon burst and, finally, a bolt struck the huge animal, which fell lifeless in its den."[2] Then Henǫ told the young man that the great deity, Hamendiju, had given them authority to watch over the people and see that no harm came to them.[3]

The Thunder revealed himself as the guide and protector of the Wyandot in some of their wars. Sayentsuwat, a famous war chief of ancient times, is said to have heard the steps of the Thunderer coming toward him at night while he was leading a war party against the Cherokee. Henǫ spoke to him, and said, "Are you not wondering about the manner of attracting your enemies out of their rock caverns?" Sayentsuwat replied, "Yes!" and the god said, "You must be near their caverns and ready for the attack when the sun goes down." So it happened, and, at sunset, clouds arose in the sky and loud blasts resounded. The Thunderer, in fact, drove all the Cherokee out of their cave dwellings; and, as they were running toward a hill, he destroyed them all. Thus Sayentsuwat had won the battle with the help of his "grandfather," Henǫ.[4]

[1] H. Hale, in *Jour. Am. Folk-Lore*, IV, pp. 290–292.

[2] Ibid.

[3] Ibid., p. 292.

[4] War adventure recorded in text by myself in 1912; informant Catherine Johnson, Wyandotte, Oklahoma.

The Thunder is also a god of vegetation, to whom the Iroquoian Indians considered themselves indebted for rain.[1] A young Wyandot was formerly believed to have learned from the Thunder god himself the secret art of rain-making, which he communicated to several persons. These human rain-makers, bound to strict secrecy, were popularly known to produce rain whenever it was needed. Not very long ago, one of the Detroit Wyandot claimed that he had once become partly possessed of this secret.[2]

Henǫ has many assistants, generally stated to be his sons, who help him in the fulfilment of his many functions. Three young men, according to Wyandot myths, appeared with him, on at least two different occasions, to Indians who needed his protection against monsters.[3] An informant further remarked[4] that only three Thunder deities were required on one of these occasions, but that there are many of them; and that when the thunder is heard rolling in many parts of the sky it is because several of them are at work. On the other hand, some Iroquois traditions are to the effect that Henǫ has only two assistants, one of whom is half human and half divine.[5]

One of the Thunderers, named Tsijutǫ'ǫ, was long ago born from a Wyandot woman and one of Henǫ's subordinates. This Wyandot myth,[6] briefly stated is as follows:

A beautiful Wyandot young woman was in the habit of scorning her suitors. One day she became the bride of a handsome young man, who brought her into his remote country. He was, in fact, but a metamorphosed monster Snake; and, to her great awe and disappointment, she soon realized it. As he went out hunting the young woman took flight in a northerly direction. Her husband chased her and caused the water gradually to rise all about the

[1] Morgan, loc. cit., p. 149; Smith, loc. cit., pp. 54–55. 72–73; Hewitt, loc. cit., pp. 249–250; Converse, loc. cit., pp. 39. 42.

[2] H. Hale, loc. cit., IV, p. 293.

[3] H. Hale, loc. cit., p. 292; Catherine Johnson and Smith Nichols, Oklahoma Wyandot informants, 1911–1912.

[4] Chief Joseph While to H. Hale, loc. cit., pp. 292–293.

[5] Morgan, loc. cit., p. 150; Converse, loc. cit., pp. 39–42.

[6] Recorded in text by myself, in Oklahoma; informants, Catherine and Allen Johnson.

fugitive woman, so that she might not escape. But as she perceived several men standing at a distance, she heard their chief shouting to her, "This way! Come and stand behind me! I shall defend you against him!" And he spoke to his men, saying, "Shoot right there!" So it was done, and the big Snake was destroyed. When the smoke dispersed, the young woman was taken along by her protectors, Henǫ and his three sons, into their country; and she became the wife of one of the younger Thunderers. As she was constantly longing, however, to visit her mother, the chief Thunderer consented to show her "the way down to her mother's home." She brought her son along with her, but she pledged herself to take the utmost care of him and never to allow him to quarrel with his human friends, for fear that he might draw his bow at other boys and thus kill them outright. The child grew fast, and in his fourth year he could play with the other boys. It happened that once he drew his bow at his friends who had annoyed him. A peal of thunder resounded, and his father at once appeared to the Wyandot woman, saying, "I have now taken him along with me, and whenever it rains while the sun is shining, the people shall think and say that Tsijutǫ'ǫ, the Wyandot, is making the rain. And it was the common saying, among the old people, that Tsijutǫ'ǫ, the son of the Thunder and the Wyandot woman, was responsible for the sun shower.[1]

The Thunderers were formerly worshiped and prayed to by all the Iroquoian peoples. Among the Iroquois proper, the worship of Henǫ is both public and private. In the Onondaga annual Planting, Strawberry, Green Bean, Green Corn, and Thanksgiving feasts, one day used to be dedicated to Henǫ.[2] In the Green Corn ritual of the Oklahoma Cayuga and Seneca,[3] "Grandfather Thunder" is still prayed to and requested not to injure any of his people with lightning or hail, and not to pour too heavy rains.[4] Among the Seneca, "a special ceremony, called *Wesaze*, is held every

[1] Informant, Allen Johnson, Wyandotte, Oklahoma.

[2] Beauchamp, "Onondaga Customs," in *Jour. Amer. Folk-Lore*, vol. 1, p. 200.

[3] As well, presumably, as in those of other tribes.

[4] Chief James Logan, Seneca reservation, Oklahoma; information collected by myself, in 1912.

spring in honor of the Thunderer." The dance is called when the thunder is first heard in the spring; and, after the first dance a thanksgiving speech is recited, followed by a war dance.[1] A ceremony was occasionally held by the Iroquois in a dry season, with the intent of bringing rain. When the rumbling of thunder was heard from a distance, heralds at once notified the people that the sons of Heno were in their neighborhood, that each family should first make a private offering of tobacco to these deities, and then gather in the council-house for a public offering of tobacco and a Rain dance.[2] It is still remembered among the Wyandot of Anderdon, Ontario,[3] that during an electric storm some of the old people would place upon a stump a pipeful of Indian tobacco ready for smoking, and utter the formula, "Grandfather, many thanks to you!" This ritual, termed "treating Grandfather with a pipeful of tobacco," was considered as a sure preventive against danger from lightning.

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OTTAWA, ONTARIO

[1] Converse and Parker, *Bull. New York State Museum*, No. 125, pp. 39–42.
[2] Mrs E. A. Smith, loc. cit., pp. 52, 72, 73.
[3] Miss Mary McKee; information collected by myself, in 1911.

THE CULTURAL POSITION OF THE PLAINS OJIBWAY

By ALANSON SKINNER

AS a whole the Ojibway Indians are a strictly forest-dwelling people, possessing all the various traits of woodland culture. Along their western border, however, the lure of the buffalo herds, and later the persuasions of the traders, induced many of the tribesmen well out on the plains. Here a number may still be found, principally on reservations in Manitoba, Saskatchewan, and North Dakota. They are generally called Saulteaux, but some bands, at least, denominate themselves as "Bûngi" and consider themselves as distinct from the Ojibway by reason of long separation. Whether or not the Bûngi form a separate group from the Saulteaux is not yet certain, but the name is relatively an old one, and there is some evidence that a difference exists. The data here presented were gathered principally from the Bûngi of Manitoba during the summer of 1913.

During the sojourn of these Indians on the prairies the original culture of the Bûngi has been somewhat modified, and in order to ascertain to what extent changes have taken place, we will pass over in a concise review the main features of the culture of the two areas involved, the Plains and the Woodlands.

In a paper read before the Congress of Americanists at Quebec in 1906, Dr Wissler[1] noted the principal characteristics of the first group as follows:

1.—The almost complete dependence upon the flesh of the buffalo for food: the curing of this flesh and afterwards pounding it fine and storing it in bags known as parflèches.

2.—The almost exclusive use of a tent, made of buffalo skins stretched around a conical frame-work of poles. This tent is generally known as a tipi. In formal gatherings, these tents are arranged in a large circle known in ethnological literature as the "camp circle."

[1] Diffusion of Culture in the Plains of North America, *Congrès International des Américanistes*, XV Session, tome II, p. 39, Québec, 1906.

3.—The use of the dog travois for the transportation of tents and personal property and later the adaptation of the same instrument to the horse. The only water transportation typical of this area was by raft or the bullboat, used exclusively for ferrying.

4.—The almost entire absence of weaving, either of cloth or of basketry, and the very limited use of pottery. The chief industry of the women was work in skins.

5.—The use of the circular shield made of buffalo skin, the elaborate spreading head dress of eagle feathers, and the decorated shirt, usually fringed with hair, characterized their military life.

6.—The ceremonial organization and religious life was characterized by the Sun Dance, the worship of the Buffalo, the medicine-bundle and military societies having a progressive relation to one another.

7.—The decorative art, confined almost exclusively to painting upon raw hide and embroidery in quills or beads, is peculiar in the use of few rectangular and triangular designs, for the composition of complex figures.

In a similar manner the main points of Forest culture may be noted, taking for our purpose the Central Algonkin, and noting that nearly all the features to be mentioned are found among some group of the Ojibway proper.

1.—Hunting and agriculture almost of equal importance in gaining sustenance. Buffalo of no consequence as food, since they were too far away. Wild rice an important commodity. Trunk-like parflèches different in type from the flat folding form found among some of the tribes of the plains. Birch-bark baskets and woven bags generally used as receptacles.

2.—Round dome-shaped wigwams made of bark or bullrush mats in summer, square bark houses in winter. Conical bark tents to the north. Camp circle unknown.

3.—Bark and dugout canoes used for transportation; neither the travois nor bullboat found.

4.—Sashes, bags, and quillwork woven; to the north, rabbit-skin blankets and garments. Pottery good and abundant. Industries of the women varied.

5.—Roach, or fur fillet headdress. Women's garments in two pieces. To the north the Ojibway women wore a gown with separate sleeves. Soft-soled moccasins.

6.—Military life characterized by the use of war bundles. No graded military societies, but those who had achieved war honors, either men or women, became members of a warrior class for life.

7.—Religion was characterized by a complex pantheon. No Sun dance; the Midéwiwin. or Medicine Lodge Society, and the Wabano and Jesako cults important. Picture writing on birch-bark and wood connected with religion.

8.—Decorative art more inclined to conventionalized flower forms.

9.—Scaffold burial unusual; the dead were mostly interred. Ceremony at grave when warriors count coups, that the spirit of the deceased may be properly attended on the journey to the hereafter.

Now let us examine the Bûngi. Knowing their supposed origin and antecedents we must expect that they originally formed a unit of Forest culture, now exchanged for or intermingled with that of the Plains.

In the case of the first group of cultural traits we find the Bûngi formerly almost completely dependent on the buffalo; they harvested wild rice very little if at all, and they practised agriculture. On the other hand, we must not be misled by the last fact, for there are Indians yet living who claim to remember the introduction of maize from one of the village tribes of the Missouri. Both the box and the flat folding type of parflèches were used, and likewise woven bags of the typical Central form.

In the case of the second set of traits we find the Bûngi used the buffalo-hide tipi almost exclusively, but that the conical bark wigwam was still retained occasionally. The camp circle was always used when any band was assembled.

Now the travois is one of the most typical means of transportation among the Plains tribes, and it has been shown that the canoe, either dugout or of bark, is typical of the forest peoples. The Bûngi possess the travois (not only the dog but the horse contrivance), and the dugout canoe as well. They do not use the bullboat, although they have seen such craft on the Missouri.

While the art of weaving was absent from the Plains, the Bûngi

for a long time retained it, though it is obsolescent today. Bags of bark twine, reed mats, and rabbit-skin garments were all made, and a few examples are yet to be seen. Pottery they claim to have had, but evidence as to whether they made it themselves, or not, has not yet been gathered.

The round bull-hide shields of the Plains were made and abundantly used, and while no data could be found relative to the use of the elaborate Plains warbonnet, the roach and the fur fillet were found. The women's dress was of the Northern Central type—a gown with detachable sleeves. Soft-soled moccasins were commonly worn, but those with hard soles were by no means unknown.

The two religious ceremonies, which seem to have been nearly equal in importance, were the Sun dance and the Midéwiwin. The cult of the Jesako, though not of the Wabano, was found. The Bûngi possess the regular complex Central Algonkin pantheon.

Their military life lacked the progressive age-societies of the Plains, but had the permanent warrior system of the Forest, by which a man, a woman, or a child performing a brave deed, automatically became a warrior for life. The soldiers' lodge was erected in every band or tribal camp, and there the qualified braves resided with the chief. Apparently war and other medicine bundles were unknown.

In their decorative art the Bûngi thoroughly mix the flower designs of the Forest with the geometric figures of the Plains. They practised picture-writing on birch-bark which characterizes the Woodlands, and once used painted buffalo-robes.

While they once employed the scaffold burial, according to tradition, they now inter their dead. They erect a lodge over the grave for the accommodation of the ghost, and perform all the typical funeral rites of the Central Algonkin area.

Their folklore, so far as recorded, is almost entirely that of the Forests, but a few Plains elements occur.

One feature, shared only with the Plains Cree and the Assiniboine, with whom the Bûngi were always associated, is a clown ceremony. This is gotten up by a man who has dreamed the rite.

A tent is erected in the camp circle for the exclusive use of the clowns. They exorcise demons from the sick, dress grotesquely, wear masks, use inverted speech, beg tobacco at dances, have a ceremonial hunt of a ridiculous sort, and perform many ludicrous rites and antics. There is more than a possibility that the Bûngi derived this custom from a group of Iroquois domiciled near them on Red river as early as 1790. Mr Arthur C. Parker informs me that nearly all these features are duplicated in certain Iroquois ceremonies.

While other facts could be adduced to show the commingling of Plains and Forest culture among the Bûngi, the summary here given is sufficient to prove the point. To conclude, let us say that the Bûngi, traditionally of recent advent into the Plains area, entered the region fully equipped with Woodland culture. Under constant pressure from outside sources, their culture has been influenced at every point, their religion and folklore perhaps suffering the least change, although they have adopted the Sun dance, and some elements of the folklore of the Plains. Thus it will be seen that not only has the strictly rational and material side of their life been affected, but that their religion, social life, and government have also been modified. As they stand today they present a perhaps unparalleled example of mixed culture—almost half and half. Had not their development been arrested by the influx of white settlers and the annihilation of the buffalo, their further progress would have been an interesting problem, the solution of which is probably to be traced by successive steps through the Plains Cree and the Blackfoot.

American Museum of Natural History
New York City

A PREHISTORIC STONE COLLAR FROM PORTO RICO

By J. WALTER FEWKES

IN the following pages attention is called to an unusual form of prehistoric stone collar found near Arecibo, Porto Rico. A detailed description of this object will be incorporated in a monograph which the author has in preparation on the Aborigines of the West Indies.

Attention was first called to this stone collar in the following lines of an article on Porto Rico Stone Collars and Tripointed Idols:[1] "Sometimes the projection is feruled, often with pits like eyes, and in one collar the prominence is said to have the form of a snake's head." To this is added the following note: "This specimen is owned by Mr Leopold B. Strube of Arecibo, who has sent the author a drawing which shows the knob in the form of a snake's head." This reference was later quoted in the writer's memoir on the Aborigines of Porto Rico.[2]

On a recent visit to Europe the author examined the specimen, now in Bremen,[3] and made the drawings reproduced in figures 97–100. A glance at the first of these shows that it belongs to the type called by the late Professor O. T. Mason[4] the "right-handed variety of the slender oval group."

This collar is made of a hard, light-gray andesite or diorite, with surface fairly smooth but not finely polished. Its general form is not unlike other examples of the slender ovate type. The special differences are found in the ornamentation of the decorated panel border and the modification of the projection or knob into an animal head. It measures 15 and 11 inches in greater and lesser diameters respectively.

[1] *Smithsonian Miscellaneous Collections*, vol. XLVII, pt. 2, 1904.

[2] *Twenty-fifth Annual Report, Bureau of American Ethnology.*

[3] The author acknowledges with pleasure his indebtedness to Dr Johannes Weissenborn, Curator of Ethnology in the Stadliche Museum, Bremen, for the opportunity of studying this instructive specimen.

[4] Latimer Collection of Antiquities from Porto Rico in the National Museum at Washington, *Smithsonian Report for 1876.*

The undecorated panel shows no exceptional features, except that the rim is pinched midway of its length into a triangular projection, as shown in figure 97, but which could be better seen from one side. A slightly raised band extends round the collar, just below the so-called boss or elbow, joining the upper and the lower margin of the decorated panel border. As will be pointed out presently, the head carved on the panel border is very well made and instructive.

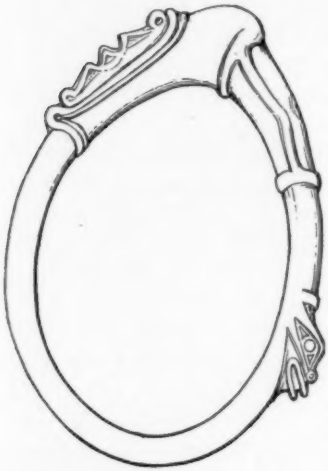


FIG. 97.—The Strube stone collar (Bremen Museum).

Lateral and dorsal representations of the knob modified into a head are shown in figures 98 and 99.

Before the author had examined the Strube specimen, he was of the impression, from sketches of the objects, one of which was kindly sent to him several years ago by Herr Strube, and the other by Professor W. H. Holmes, who saw the specimen in the Bremen Museum, that the head replacing the projection or knob represents that of a serpent, but he is now able to point out a more striking resemblance to the head of some other reptile, a conclusion reached mainly from comparative studies of similar heads found in some of the three-pointed stone idols of the first type, figured elsewhere.[1]

The three-pointed idols with heads like those of the Strube collar also possess legs, which would prohibit their identification as serpent idols and would weigh against acceptance of the opinion that the head on the collar represents a snake, were it not for the fact that primitive man is not always consistent in fashioning his images; hence the heads of both, even when furnished with limbs,

[1] Aborigines of Porto Rico, pls. XXXIX *a*, *a'*; XLI *b*, *c*; XLII *a*, *b*; XLIII, XLIII *a*, *a'*.

may represent some serpent monster, the iguana, or a reptile with the body and appendages of a turtle.

The modification in the projection in this collar, although less usual than other features, is not more instructive than the unique figures graven on the border of the decorated panels. The surface

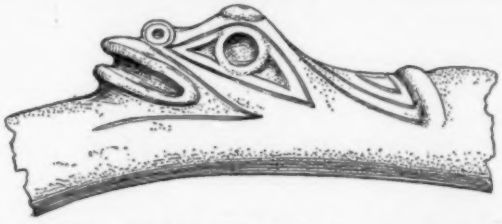


FIG. 98.—Lateral view of "knob" of the Strube stone collar (Bremen Museum).

of the panel is not exceptionally ornamented, but its border is sculptured into the form of a head with lateral appendages much better made than is generally the case.

The appearance of the head and legs on the panel border of this specimen (fig. 100) are as exceptional in form as the knob, for unlike

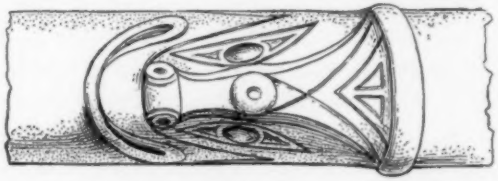


FIG. 99.—Dorsal view of "knob" of the Strube stone collar (Bremen Museum).

the heads cut on the panels of other slender oval collars the head of this specimen is in high relief. The relation of the head to the collar is here exactly reversed, as compared with that of almost all other collars, for the forehead adjoins the panel instead of being turned away from the decorated panel. The two lateral appendages extending along the border on the sides of this head are readily comparable with similar figures, in the same position, on other collars. A representation of the head and appendages as seen from below shows that the lower jaw is pointed and triangular.

The form of the decorated panel border of the Strube collar bears directly on our interpretation of this feature in other collars and sheds light on the meaning of certain conventionalized figures on other specimens in which the head form is not so evident as in this specimen, as may appear from the following comparisons.

The decoration on the panel borders of different stone collars falls naturally into a series passing from realistic to conventionalized figures, shown in the accompanying figures 101–107. In order to interpret these decorations, we may pass from the most complicated to the simplest form.

Commencing with the form shown in figure 101, representing a specimen now in the Heye Museum, we have a massive collar with a head cut in high relief on the surface of one side. This head (*h*) resembles those constantly found engraved on stone images or

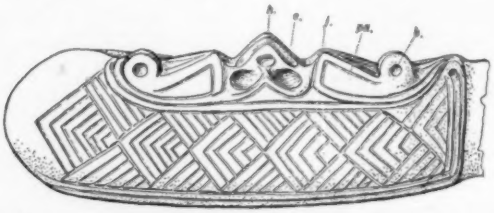


FIG. 100.—Decorated panel and panel border of the Strube stone collar (Bremen Museum).

modeled in terra-cotta for handles of Antillean bowls or vases. It represents a being wearing a kind of Phrygian cap, with mouth half open, large eyes, and other features recalling a turtle or some reptile. Two arms (*pa*), with the elbows bent and showing the palms of the hands and the fingers, are well represented and rise from under the chin. The hands appear to hold up rings cut at the side of the head, which they touch on each side, and are interpreted as representations of ears or ear-ornaments. These rings recall the lower lobes of the ears in certain stone yokes found in Vera Cruz and other Mexican states. The umbilicus appears on the body just below the chin, and on each side are rectangular carvings (*d*, *p*), supposed to represent other parts of the body.

In the collar of the Heye collection (fig. 101) there is practically no separation of the panel border and the panel, or rather the former has extended over the latter, which remains as a rectangular design (*d*, *p*) filling the areas on each side of the anterior appendages (*a*) and below the problematical lateral extensions (*pa*).

Extending on each side of these rings on the upper margin of the collar there is an interesting conventional figure in relief, unlike a leg or any other part of the body, but which is seen constantly in modified form in other collars. In a general way this decoration (*pa*) consists of a distal portion, which is more or less angular and of cubical form with a median pit (*b*), and a proximal region con-

FIG. 101.—Panel of stone collar (Heye Museum).

nected by means of a knee-shaped relief figure (*j*), with the head and all other portions of the design. The parts represented in this carving are the head, forearms, ear-lobe or ornament of the ear, and a knee-like problematic body. Every organ except the last can be readily identified, but in order to determine the meaning of the knee-like member, we must consider similar relief designs on collars in other collections.

The ornate design on the panel border of the Strube specimen in Bremen naturally next claims our attention. In considering this example (fig. 100) it will be noticed at once that the mouth, eyes, and all other parts of the face are reversed when compared with the head of the collar in the Heye collection (fig. 101). This is due to the fact that its left side represents the right side of the Heye collar, as will be seen when these collars are laid with the decorative panels uppermost for comparison, in which case the lower jaw in the former is naturally below, while in the latter it is above, a re-

versal caused by one of these collars being right-handed while the other is left-handed. This does not prevent a comparison of similar parts in the ornamentation of the collar, but it must be borne in mind that they are in reversed positions.

We fail to discover on sides of the head of the Bremen collar any indication of those rings or ear-ornaments in relief that are so conspicuous in the Heye Museum specimen. There are likewise no homologues of arms and hands below the chin, but the lateral figures carved in low relief on each side are represented in somewhat modified form. Here occur representations of a joint (*j*) and the terminal circle with a deep pit (*b*), leading us to consider them the same organs. The panel is distinct from its border and has no sign of legs.

Passing to a consideration of a collar figured by Professor Mason and said to be from Guadeloupe, we discover on the decorated panel border a still greater simplification of the head which here (fig. 102)

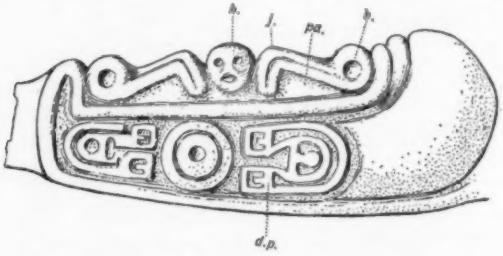


FIG. 102.—Panel of stone collar (Latimer collection).

appears as a circle (*h*), with eyes and mouth represented by shallow pits. The problematical lateral organs (*pa*) have here become simple scrolls, with a pit (*b*) in the middle of the distal end, a conventionalization which is paralleled by that shown in another design on the panel margin of a collar from the Latimer collection figured by Mason,[1] where the lateral appendages (*pa*) are reduced to scrolls, although the joint is still angular.

A similar decorated panel is found in one of the collars of the Latimer collection (fig. 103).

[1] Op. cit.

We pass now in our comparison to a collar (fig. 104) in which the face on the panel border is divided medially into two parts, and the remainder of the figures, especially the lateral scrolls, have undergone a strange elongation. The simple pits representing eyes still

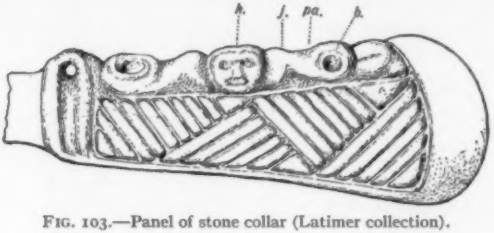


FIG. 103.—Panel of stone collar (Latimer collection).

remain, and each of the halves of the former head is continued into an extension curved into a scroll in which the only recognizable feature is the jointed organ.

Another variation in the figure on the decorated panel border (fig. 105) occurs in another of the Latimer collars. The vertical divison between the eyes separating the face into halves has not

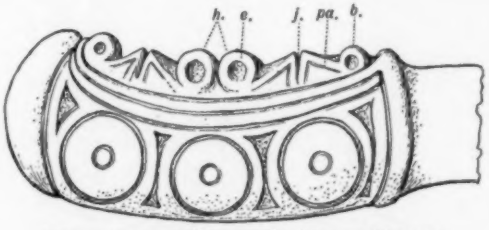


FIG. 104.—Panel of stone collar (Bremen Museum).

extended wholly across the head, and the forehead here remains undivided. The scroll-like lateral appendages (*pa*) that make up the remainder of the figure of the decorated panel border have no exceptional features.

In still another collar of the Latimer collection, the conventionalization of the panel border figure has proceeded so far that the resemblance to a head with lateral appendages is completely lost.

Here we have simply two scrolls with one extremity of each approximated and their distal ends widely separated and extended.

In another collar of the Latimer collection the decoration of the panel has been subjected to further modification in form, the panel figure taking the form of two rectangles representing the half-

FIG. 105.—Panel of stone collar (Latimer collection).

circles of the divided face, each bearing a pit representing an eye. The elbow-like scrolls are present with their terminal dots rising one on each side of the rectangle representing half of the face.

Any resemblance of the panel decoration shown in figure 106, to a human head with lateral appendages has wholly vanished. Here the decorated panel border takes the form of a narrow rectangular

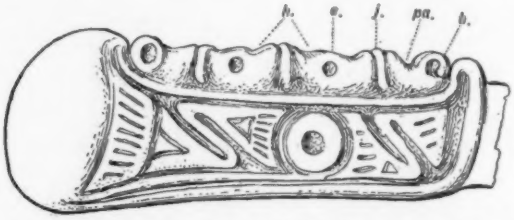


FIG. 106.—Panel of stone collar (Latimer collection).

figure with rounded ends, slightly curved upward and crossed at regular intervals by three pairs of bars. In each of the intervals there is a small pit, two of which (*e*, *e*) represent all that remains of the eyes, and two (*b*, *b*) those constants at the extremities of the scroll-like appendages that exist in the figure of the most complicated panel border.

There remain other designs on panel borders, one (fig. 107[1]) of a collar in the Trocadero Museum at Paris, and the other (fig. 108) in the Latimer collection. The outlines of these show important modifications, but these also in reality teach the same morphology as the preceding, viz., that figures on the decorated panel borders are simply highly conventionalized heads with extended lateral appendages.

There is one feature lacking in the figures last mentioned that should be explained. Since the pits which represent the eyes, as we have pointed out, are here absent, it might be supposed that the conventionalized head is also wanting; but if we compare them with the underside of the figure cut in the panel of the Bremen collar (fig. 109), the reason for this lack is apparent. All of these represent the underside of the lower jaw, not the upper part of the head where eyes, mouth, and nose are present.

From the comparative data given above we are able to say that wherever we have figures cut on decorated panel borders, they probably represent a head, body, arms, or legs, often highly conventionalized and sometimes lost. As the arms or forelegs appear in the more completely represented form figure 101 accompanied with the problematical lateral scrolls, we cannot regard these scrolls as duplicate arms or fore-limbs; if they are appendages they must be posterior limbs or legs. The posterior appendages in all these instances have been brought forward into the same plane as that in which the head and anterior legs lie, and by this contortion have lost all likeness to limbs.

This interpretation of the ornamentation of the decorated panel border of the stone collar reduces it to a figure of the same general character, but it takes no account of certain figures on the surface of the panel itself. The figures engraved on this area are sufficiently distinctive to bear certain resemblances whose meaning is doubtful.

The decorated panels of several stone collars (figs. 102, 104, 105, 106) bear an incised ring or circle, sometimes with and sometimes without a central pit. On each side of this circle there are constantly represented well-made figures, of as yet unknown significance, that

[1] The author is indebted to Professor M. H. Saville for this illustration.

have certain common resemblances in all specimens in which they occur. It may be assumed, but without positive proof, that these figures represent parts of the body; for example, the circle, which so often appears in Antillean art, represents the umbilicus, while the

FIG. 107.—Stone collar showing unique decorated panel border (Trocadero Museum).

incised geometric lines on each side of it resemble figures of legs or arms.

In several of the decorated panels we find this circle doubled; or these duplicated circles may be connected or modified in such a way as to appear as spirals (fig. 108);[1] or at times parallel lines may

[1] This form suggests the ornamentation of a fragment of a specimen of doubtful relation in the Stahl collection, now in the American Museum of Natural History, New York.

extend from the circles. The figures on the decorated panel of several collars consist of geometric parallel lines arranged in squares and chevrons, a form of decoration sometimes found on panels of massive collars. These are regarded as decorations of the body of the animal or the human form represented.

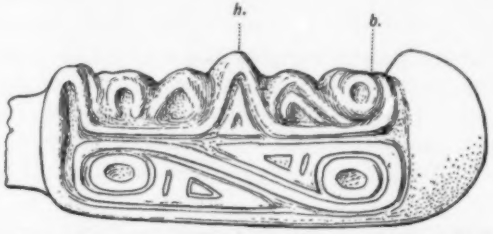


FIG. 108.—Decorated panel and panel border of stone collar (Latimer collection).

The main difference supposed to exist between the Bremen collar and other examples of its kind would seem to be the modification of the projection or knob into an animal head, and yet when we examine a series of collars we find several specimens in which the projection is carved in such a way as to suggest the conventional head of some animal.

FIG. 109.—Under side of decorated panel of the Strube stone collar.

Many massive stone collars[1] and some of the slender ovate[2] varieties have two "knobs", one of which projects on each side of a binding band or shoulder band filling the interval between them. In one instance the two ends are not united by a band but are hooked together.

[1] Aborigines of Porto Rico, pl. lxiii, lxiv, lxv.

[2] Prehistoric Antiquities from the Antilles in the British Museum, *Journ. Anthr. Institute*, vol. XXXVII, pl. xl, 1907.

No decorations appear in any of these double knobs, and all are without eyes or other indication of the presence of a head, which is likewise true of those examples in which the projections do not rise above the surface of the collar, although a remnant of the shoulder band[1] may in these cases sometimes survive.

When the projection bears any design, it is commonly flattened, with a pit on each side. Another form of simple flattened knob, having circles on each side and parallel lines between them, is found on the second Bremen specimen. In the Heye Museum example, where the projection is not very prominent, it is marked by a single transverse and several parallel grooves, recalling the parallel lines between the pits in an undescribed collar in the Bremen Museum.

The simplest interpretation of these variations in the so-called projection or knob of a stone collar would be that, like that of the Strube specimen, it represents a highly conventionalized head, and that the accompanying pits or circles are eyes.

BUREAU OF AMERICAN ETHNOLOGY
WASHINGTON, D. C.

[1] Aborigines of Porto Rico, pl. lxv, *f*.

THE MAN OF PILTDOWN

By GEORGE GRANT MACCURDY

THE story of the Piltdown discovery is already more or less familiar to readers of this journal.[1] But the recent gathering and publishing of additional data[2] on the subject should not be allowed to pass unnoticed. This is especially true not only because of the far-reaching significance of the discovery, but also because British scientists have been known to be at odds concerning the reconstruction of the skull in question.

It will be recalled that Dr Smith Woodward regarded the Piltdown specimen as the type of a new genus of the family Hominidæ, to which he gave the name *Eoanthropus dawsoni*, and which was defined primarily by the characters of the mandible. Of the mandible only the right ramus with first and second molar teeth *in situ* was at first discovered. The condyle and symphysis were both lacking, but the fragment was of sufficient size to enable Dr Smith Woodward to reconstruct the symphysis with a fair degree of accuracy. It was the reconstruction of the cranium about which differences of opinion arose between Dr Smith Woodward and Professor Elliot Smith on the one hand and Professor Arthur Keith on the other.

Of the brain case nine fragments, parts of the frontal, parietal occipital, and temporal, were found. From these Dr Smith Woodward reconstructed a skull with a capacity of about 1076 cc. On the other hand a reconstruction by Professor Keith gave to the skull a brain capacity of 1500 cc., in other words that of a well-developed modern European skull. After further study Dr Smith

[1] *American Anthropologist*, N. S. XV, Apr.–June 1913.

[2] Chas. Dawson and A. Smith Woodward, Supplementary Note on the Discovery of a Palæolithic Human Skull and Mandible at Piltdown (Sussex), *Quar. Jour. Geol. Soc.*, LXX, Apr. 1914.

Woodward acknowledges a small error. He finds that the "longitudinal ridge along the outer face at the hinder end of the parietal region is not median, but one of a pair such as frequently occurs in the lower types of human crania." In the published reconstruction there should thus be a slight readjustment of the occipital and right parietal bones, "but the result does not alter essentially any of the conclusions already reached."

With this opinion Professor Elliot Smith is in complete accord. From an examination of the original fragments he was able to determine the location of the median line of the skull. The persistence of slight traces of the sagittal suture in the regions of the bregma and lambda made this possible. The true median plane in this particular case however passes a little to the left of the union of the coronal with the sagittal suture owing to a slight deflection of the latter. Since this deflection is never more than a few millimeters (except where large bregmatic wormian bones are present, and they are not present in this case), the bregma and lambda are good guides in locating the median plane. In line with the median plane as thus determined, the endocranial aspect of the frontal bone presents a well-defined longitudinal ridge, corresponding to the "place where the two halves of the frontal bone originally came together at the metopic suture." The cranial capacity then of the Piltdown skull is evidently not very much greater than the original estimate of 1076 cc.

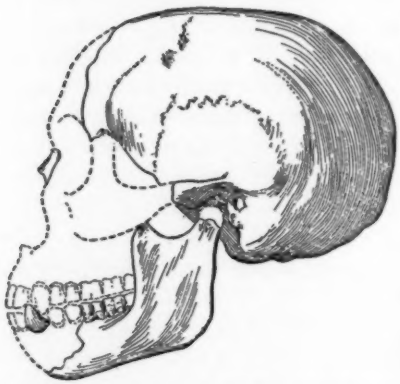
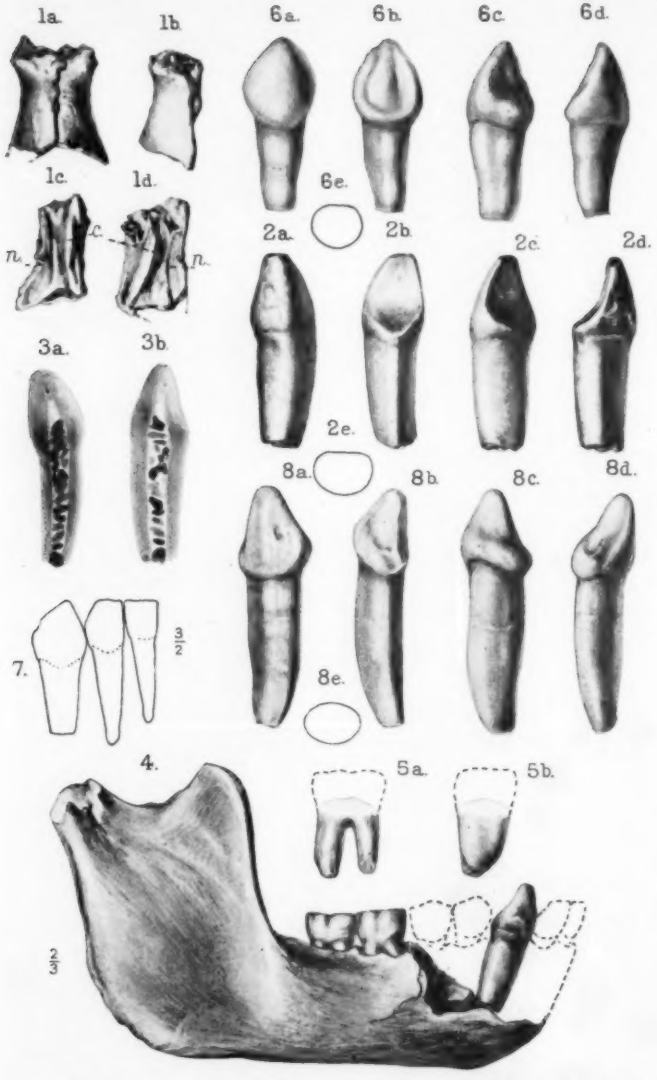


FIG. 110.—Restoration of the skull and lower jaw of *Eoanthropus dawsoni;* nearly a third of natural size. After Dawson and Woodward.

In addition to exhaustive laboratory studies on the parts above



Figs. *1a–1d*. Nasal bones of *Eoanthropus dawsoni*. Figs. *2a–2e*. Right lower canine of *E. dawsoni*. Figs. *3a–3b*. Radiograph of the same. Fig. *4*. Right mandibular ramus of *E. dawsoni*. Figs. *5a–5b*. Impression of cavity for roots of third lower molar. Figs. *6a–6e*. Right lower milk-canine of *Homo sapiens*. Fig. *7*. Right lower milk-canine and milk-incisors of *H. sapiens*. Figs. *8a–8e*. Right lower milk-canine of *Simia satyrus*. Natural size unless otherwise indicated. After Dawson and Woodward.

mentioned, a painstaking and systematic search was made at the Piltdown site. The mandibular ramus had been found *in situ*. All the gravel *in situ* within a radius of 5 meters of this spot was "either washed with a sieve, or strewn on specially prepared ground for the rain to wash it; after which the layer thus spread was mapped out in squares, and minutely examined section by section." In this spread Father Teilhard de Chardin, assisting at the work for three days, found the right canine tooth in August, 1913. The two human nasal bones and the turbinated bone were not recovered from this spread but from disturbed gravel within less than a meter of the spot where the mandible had been discovered.

The nasal bones (pl. XXX, 1a–1d) are said to "resemble those of existing Melanesian and African races, rather than those of the Eurasian type." In thickness they correspond to the bones of the skull previously found. The canine tooth not only corresponds in size to the mandible but belongs to the same half (right) as that recovered. It likewise agrees with the two molar teeth in the degree of wear due to mastication. The extreme apex is missing, but whether by wear or by accidental fracture is not determinable. The enamel on the inner face of the crown (pl. XXX, 2b) has been completely removed by wear against a single opposing tooth. The worn surface "extends to the basal edge of the crown, as indicated by the clear ending of the cement along its lower margin." This canine tooth is larger than any human canine hitherto found, and interlocked with the opposing upper canine. It rose above the level of the other teeth and was separated from the lower premolar by a diastema. On the other hand there is no facet due to wear against the outer upper incisor, such as often occurs in the apes.

If a comparative anatomist were fitting out *Eoanthropus* with a set of canines he could not ask for anything more suitable than the tooth in question. It conforms to a law in mammalian paleontology, "that the permanent teeth of an ancestral race agree more closely in pattern with the milk-teeth than with the permanent teeth of its modified descendants." Even a cursory view of plate XXX will bring out the points of resemblance between the Piltdown canine (figs. 2a–2d) on the one hand and the corresponding milk

canines of *Homo sapiens* (figs. 6a–6d) and of *Simia satyrus* (figs. 8a–8d) on the other. It is pointed out that in recent Man if the base of the crown of the canine were raised in the gum to the same level as that of the adjacent teeth, its apex would frequently rise well above the rest of the dental series (pl. XXX, fig. 7).

The various elements that make up the gravel bed at Piltdown are better known today than when the first report was published; additional fossil animal remains have also been recovered. Four

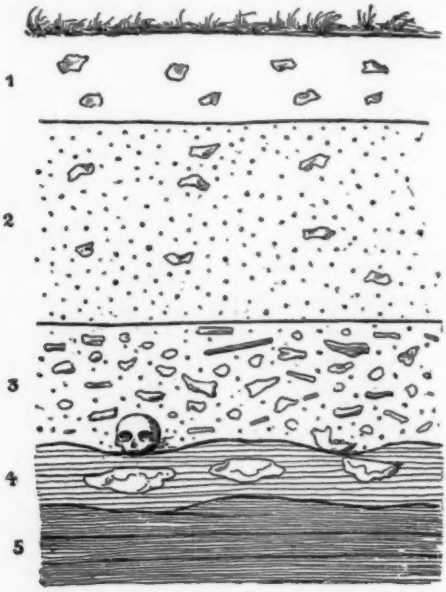


FIG. 111.—Section of gravel bed at Piltdown (Sussex). After Dawson and Woodward.

well-defined layers have been determined (fig. 111). At the top is a deposit of surface soil 35 cm. thick, containing pottery and flint implements of various ages. The second bed consists of undisturbed gravel varying from a few centimeters to a meter in thickness. The prevailing color is "pale yellow with occasional darker patches."

A rude paleolith of the Chellean type was found in the middle of this layer, which likewise contained rolled iron-stained subangular flints. The third layer, some 50 cm. thick, is easily distinguished because of its dark ferruginous appearance. It contains rolled and subangular flints similar to those found in the layer above. All the fossils (with the exception of the remains of the deer) were either discovered in or have been traced to this third layer. So-called eoliths and at least one worked flint were likewise found here. The *Eoanthropus* remains came from it and near the uneven floor forming the upper limit of the fourth stratum. The latter has a thickness of about 25 cm., is non-fossiliferous, and "contains flints of a much larger size than any of those in the overlying strata." Nothing that could be called an implement or eolith has been reported from the fourth bed. Below (no. 5) are undisturbed strata of the Tunbridge Wells Sand (Cretaceous).

Our knowledge of the Piltdown fossil fauna has been supplemented by the finding of remains of one new form, a fragment of a tooth of *Rhinoceros*, in the same state of mineralization as the teeth of *Stegodon* and *Mastodon* previously described. While the specimen cannot be determined with absolute certainty, it belongs either to *Rhinoceros mercki* or *Rh. etruscus*, with the evidence rather favoring the latter. Additional remains of *Stegodon* (fragments of a molar) and *Castor* (fragment of mandible) were likewise recovered. Judged from its fossil content the third stratum at Piltdown would be classed as Pliocene were it not for the presence of *Eoanthropus* and the beaver. In view of the fact that the remains of these, although softer, are not so rolled and worn as the other fossil remains; the third bed, although composed in the main of Pliocene drift, was probably reconstructed in early Pleistocene time.

Those who might have objected to the use of the name *Eoanthropus* for the Piltdown skull can no longer deny its appropriateness when applied to the lower jaw, especially since the finding of the canine tooth. While the probabilities are all in favor of the three parts belonging to one and the same individual, the case for *Eoanthropus* does not have to depend on producing positive proof

to that effect. The only flint implement of Chellean type came from the layer above (no. 2), and is of later date than the human remains. Did *Eoanthropus* make use of the eoliths found in tell-tale association with him? The Future holds this secret, and, if hard enough pressed, may some day reveal it.

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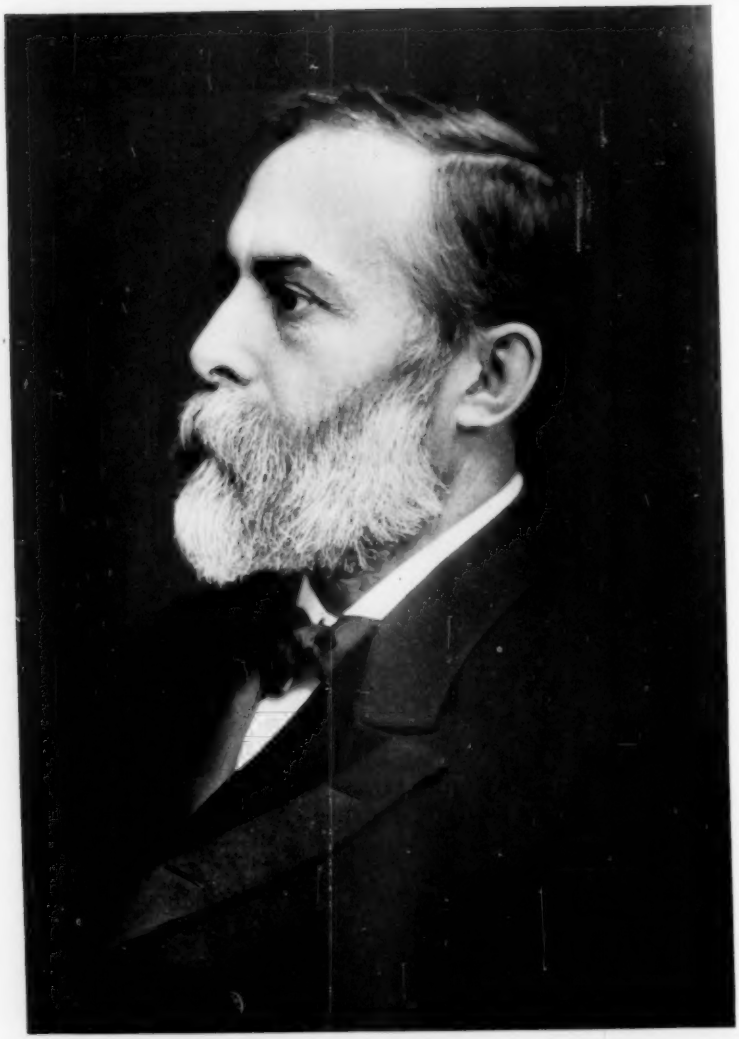

ALEXANDER FRANCIS CHAMBERLAIN — 1865-1914

In Memoriam: Alexander Francis Chamberlain

IN the death of Alexander Francis Chamberlain, professor of anthropology in Clark University, Worcester, Massachusetts, Anthropology lost one of its foremost representatives in the New World, and one who performed unique service to the science. Death was due to gangrenic diabetes, an insidious disease whose presence was unknown to him and others until a few weeks before the end. He attended to his work at the University until an affection of his foot confined him to his home; whereupon a medical diagnosis revealed the fatal disease. He passed away at his home in Worcester on April 8, at the age of forty-nine years. His body was cremated and the remains were interred at Mount Auburn in Cambridge, Massachusetts. He is survived by his wife, Isabel Cushman Chamberlain, a daughter thirteen years of age, and a brother and a sister in Toronto, Canada. To the brother, Mr Thomas B. A. Chamberlain, the present writer is indebted for information about Dr Chamberlain's early life and education. A memorial volume will be published in the autumn, in which much material not included here will appear.

Alexander Francis Chamberlain was born January 12, 1865, in Kenninghall, Norfolk, England, the eldest child of George and Maria Anderton Chamberlain. His ancestors were of sturdy English yeoman stock. While he was still a child, the family came to America and first settled, for about a year, near Bushnell's Basin in New York state, where his schooling began. From there the family moved to Peterborough, Ontario, where the elder Chamberlain became a prominent business man. Here Alexander attended the Union School and the Collegiate Institute. He passed with honors the matriculation examination for the University of Toronto, winning the scholarship awarded by the Peterborough Collegiate Institute. To enable him to pursue his university studies, his parents removed to Toronto, where they lived until their death, three months apart, in 1904.

At the University Chamberlain chose the department of modern languages. Throughout his course he took high honors and received many college prizes. In 1886 he was given the degree of B.A., with honors in modern languages and ethnology. He became greatly interested in ethnology, in the department of Sir Daniel Wilson, then president of the University, who became a warm personal friend.

In 1887 he was appointed fellow in modern languages in University College, Toronto, a position which he held for three years, during which he did tutorial and post-graduate work. He was examiner in German in University College and the University of Toronto, examiner in modern languages in the University of Trinity College, Toronto, and examiner in French and German for the Department of Education of Ontario. During this period he continued his anthropological studies, giving special attention to the Mississaguas of Scugog, an Algonquian tribe to which he paid many visits, becoming acquainted with their language and customs. The results of these investigations were embodied in a thesis, for which he was awarded the degree of M.A. by the University of Toronto in 1889. Several contributions of this period, as well as of later years, appeared in the publications of the Canadian Institute (now the Royal Canadian Institute), of which he was for years a member and at one time librarian.

In 1890 Chamberlain accepted a fellowship in anthropology in Clark University, which had been opened only the year before. Clark was the first institution in America to recognize anthropology as a subject for post-graduate study leading to the degree of Ph.D., and the first to confer such a degree, that received by Dr Chamberlain in 1892. His researches there were carried on under the direction of Dr Franz Boas, then docent in anthropology at Clark. His dissertation was on the language of the Mississagua Indians.

In the summer of 1891, on the recommendation of Sir Daniel Wilson, he went to British Columbia to study the Kootenay Indians, under the auspices of the British Association for the Advancement of Science, in whose Proceedings his report was published in 1892. As will be seen by referring to his publications, Chamberlain kept up a life-long interest in these Indians, on whose language and culture he was recognized as the foremost authority.

When Dr Boas left Clark University in 1892, Dr Chamberlain was appointed his successor, with the title of lecturer in anthropology. In 1904 he became acting assistant professor, and assistant professor in 1908. In 1911 he was made full professor. By his investigations and publications he contributed substantially to the fame of Clark University as a center of scientific research.

Dr Chamberlain has contributed voluminously to the literature of anthropology and cognate sciences. His rare knowledge of European languages was an invaluable asset to American anthropology. Articles from his pen appeared frequently in European as well as in American

journals. The appended bibliography, selected from a much longer list of titles, gives some idea of the scope of his scientific work and interest.

He rendered important service through editorial work on a number of periodicals. From 1900 to 1908 he was editor of the *Journal of American Folk-Lore*. Up to the time of his death he was a department editor of the *American Anthropologist* and the *American Journal of Archæology*. He was co-editor, with Dr G. Stanley Hall, of the *Journal of Religious Psychology* (including its anthropological and sociological aspects), published at Clark University. His excellent annotated bibliographies of current anthropological periodical literature, which involved a prodigious amount of labor, were for many years important features of the *American Anthropologist* and the *Journal of American Folk-Lore*, more recently of *Current Anthropological Literature*.

He contributed a large number of articles to several standard works of reference, including the *New International Encyclopedia*, the *Encyclopedia Americana*, the *Handbook of American Indians*, Monroe's *Cyclopedia of Education*, and Hastings' *Encyclopedia of Religion and Ethics*. His consummate product of this type was undoubtedly his article on the North American Indians in the new edition of the *Encyclopædia Britannica*, a masterpiece and model of encyclopedic writing, a distinct advance on anything of its kind which had before been published.

Dr Chamberlain was an authority in American Indian linguistics. Special fields of research were the Kootenay and Algonquian languages. His publications on the linguistic problems of South America are recognized as authoritative by students in two hemispheres. At the time of his death he had practically completed his work of many years on a distribution-map of the South American aboriginal languages, similar to that by the late Major J. W. Powell for the stocks north of Mexico. He had finished the first part of a Kootenay dictionary and grammar, which remains in manuscript form.

Dr Chamberlain was a member of numerous learned societies in both of the Americas and in Europe. He was a vice-president of the American Anthropological Association and a former secretary of the anthropological sections of both the British and the American Association for the Advancement of Science. He was a member of the American Antiquarian Society, fellow of the American Ethnological Society, honorary member of the American Folk-Lore Society, and corresponding member of the Société des Américanistes de Paris, the Institut de Coimbra, Portugal, and the Sociedad de Folk-Lore Chileño of Santiago de Chile.

Not only by training, but by native disposition, Dr Chamberlain was eminently fitted for the tasks of a student and teacher of the Science of Man. Of him it can be truthfully said that he was a man and he considered nothing human foreign to himself. "Generically human" was a favorite phrase with him, and he was himself a living embodiment of that idea. He understood and appreciated the life and outlook of primitive men, for beneath diversities of culture he recognized the generic, fundamental, universal human traits. He held that there is "not a single thing in ideal civilization not foreshadowed in primitive life." And he often called upon primitive folk as Daniels to sit in judgment on the follies and vices of our civilization. His essay entitled "The Human Side of the Indian," based on his own experiences in the Kootenay country, brings out his appreciation of primitive man. He realized the truth expressed by Dr Marett, of Oxford, that "we need to supplement the books on abstract theory with much sympathetic insight directed towards men and women in their concrete selfhood."[1]

In his interpretations of human culture Dr Chamberlain took in a decided way the historical and psychological points of view, represented by such writings as Dr Boas's book, "The Mind of Primitive Man," and Dr Wissler's essay, "The Doctrine of Evolution and Anthropology" (*Journal of Religious Psychology*, July, 1913). The biological conceptions of evolution did not, according to him, apply to the history of man's culture. To account for the origin of man himself on evolutionary principles, "mutation rather than gradual accretion by minute changes" seemed the more reasonable hypothesis. And he doubted whether any organic changes of cultural significance had taken place since the advent of man. He held a similar view of the living races of men; as regards ethnic groups, "physical variations are negligible from the point of view of culture." His views on this point are well illustrated in his articles on the contributions of the American Indian and the Negro to human civilization. The last of these is a wholesome antidote to the negrophobia so common in the land of his adoption. He was a relentless opponent of Lombrosan views of criminality and Freudian theories of sex. Neither did he get excited over the prospects and projects of eugenics: he would agree with the late Lester F. Ward, that what the human race needs is not more ability but more opportunity.

As might be expected of one who placed such emphasis on the generically human, child-life had to him an absorbing interest and a profound significance. His intimate association for almost a quarter of

[1] *Anthropology*, p. 243.

a century with the father of scientific child-study, President G. Stanley Hall, was a constant stimulus to his inherent interest in that field. Their mutual helpfulness and coöperation did not preclude marked differences of opinion, as for example on the recapitulation theory, which Dr Chamberlain regarded as essentially unsound as a pedagogic doctrine, no matter what might be its biological validity. It is significant of the man's interests that his two published volumes, "The Child: a Study in the Evolution of Man" and "The Child and Childhood in Folk-Thought," both deal, as their titles indicate, with phases of this great subject. At his death he left, in completed manuscript form, another book on child-life and education among primitive people, which is now being prepared for publication. Together with his wife, he published a series of "Studies of a Child," based on observations of their own daughter, which are among the best of the kind in the literature of child-study.

Dr Chamberlain's studies of primitive peoples and his work within academic walls did not prevent him from taking an active interest in the affairs of the world about him. While in Toronto he was deeply interested in politics, and was a prominent member of the Young Men's Liberal Club and the Toronto Reform Association. After coming to Worcester, he became identified with the radical wing of the Democratic Party. He was for a time chairman of the Democratic City Committee and served as alderman-at-large. He took part in many reform movements. He was a staunch advocate of international peace, "anti-imperialism," the single tax, woman suffrage, labor unionism, total abstinence and prohibition.

Strikingly expressive of his generic, full-orbed humanity, was his appreciation and cultivation of two aspects of human life which are not regarded by some as on intimate terms with the scientific mind, namely the poetic and the religious. His essay entitled "The Death of Pan" brings out his conception of the relations of poetry and science. We are not surprised to find that his favorite poet was Tennyson; he regarded "In Memoriam" as the greatest poem in modern literature. Like Huxley, the English biologist, and Brinton, the American anthropologist, Dr Chamberlain not only appreciated the value of poets, but himself wrote poetry. In 1904 he published a volume of poems (Richard G. Badger, Boston); several of these, as well as many of later date, appeared from time to time in various newspapers and magazines. His poems give a beautiful picture of the innermost thought and feeling of the author. The themes cover a wide range of topics—love and childhood, friendship and domestic life, peace and war, politics and religion.

In his academic lectures he emphasized the function of religion in the history of culture; he spoke of it as "a great cause in the advancement, retardation, and abolition of institutions," and "the most powerful of human motives, in the individual and the community." He affiliated with the Unitarian body, but the modernism of that denomination did not prevent his appreciation of the significance and value of the forms of religion which differed from his own in their intellectual statements. With the religions of primitive peoples he felt a strong bond of fellowship, and he spoke sympathetically of certain doctrines and practices of Catholicism, which he considered in many respects more "generically human" than "our cold northern Protestantism." His profound religious faith breathed in lines like these from a hymn entitled "The God of our Fathers":

My father's God, Thou still art mine;
'Mid changing creeds and names forgot,
The Eternal Goodness alters not,
The voice I hear, they heard, is Thine.

Thou art the same through ceaseless time,
Immutable while ages roll;
'Tis but the imperfect human soul
Whose aspect shifts with date and clime.

And, though in bygone ages they
At other altars may have knelt,
The God that with our fathers dwelt
Remains the same with us to-day.

In the daily intercourse with family and friends the richness of his character was constantly manifested. He was always cheerful and cordial. He loved simplicity and sincerity in all things. His everyday life, as well as his *Weltanschauung*, was marked by a lofty idealism and a triumphant optimism. Home life held an exalted place in his thought, and he was religiously devoted to his own home and family. "Home was the primal fount of prayer" and "the oldest faith was fireside trust" was a burden of his song. I can do no better than to close this sketch with the following lines inscribed to him by one of his pupils, Dr Miriam Van Waters, now of Portland, Oregon:

Stern champion of the human race, of man as human,
Scorner of the petty pride of creed and skin and strength,
Warrior for the weak and young,
Builder of wonder-dreams for man,
And singer of strange, sweet songs:

Thou wrought'st again the dead to life,
Thou gav'st long buried folk their due.
As some patient digger upturns the lovely face of some old jar,
Whereon the finger-print of tiny hands
Reveals the mother-heart of her who fashioned it,
Nursing her child the while;
So you lifted the earth from off her long dead loves
And hopes and dreams of simple folk;
You showed the world their worth.
Old gods, long dead, you breathed upon and made to walk again,
In all their gentle human traits,
In all their wrath and power.
We never dreamed how great was man,
How ever since the world began,
He toiled and wept and loved,
And in his heart kept flowers abloom,
The tender flowers of his imagining,
His dreams of peace and laughter in the sun,
His vision of the children in their play.

Now, who shall champion thee,
O great worker in the human craft,
Whose hand is weak with pain,
Whose battle-shout is silenced in the night?
A hundred thousand of the folk will champion thee, —
The coolie and the wage-slave and the black,
The outcast and the nestling,
And he whose lands are taken,
And he whose hopes are slain,
All these shall give thee shelter in their hearts,
And cherish thee so long as life shall last.

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DISCUSSION AND CORRESPONDENCE

Adolph Francis Alphonse Bandelier

Adolph Francis Alphonse Bandelier, distinguished for his researches in archeology and Spanish-American history, died in Seville, Spain, on March 19th. Born in Bern, Switzerland, August 6, 1850, his early education was very slight, and he never attended school after his eighth year. He was brought to the United States as a boy by his father, who had been an officer in the Swiss army and who settled at Highland, Illinois, where he became engaged in banking. Embarking in several kinds of business during his early manhood, but finding that he was not constituted to lead the life of a man of affairs, Adolph, always a student, directed his attention to ethnology and archeology, thus following in a measure the footsteps of his distinguished countrymen in the field of scientific endeavor, Albert Gallatin and Albert S. Gatschet, pioneers in the study of aboriginal American languages, and reflecting in his subsequent writings the direct and lasting influence of Lewis H. Morgan, to whom he was fond of referring as his "revered teacher." In 1877 Bandelier traveled extensively in Mexico and Central America, studying the archeology, ethnology, and history of the aboriginal inhabitants. His papers "On the Art of War and Mode of Warfare of the Ancient Mexicans" (1877), "On the Distribution and Tenure of Lands, and the Customs with Respect to Inheritance, among the Ancient Mexicans" (1878), and "On the Social Organization and Mode of Government of the Ancient Mexicans" (1879), published by the Peabody Museum of Harvard University, and "On the Sources for Aboriginal History of Spanish America" (1879), published by the American Association for the Advancement of Science, are a part of the product of these investigations. In the first three of these essays, "marked by sound judgment and correct methods of historical interpretation, he had shown a minute and familiar acquaintance with the existing sources of information concerning the conditions of the native races at the time of the Spanish Conquest. Thoroughly equipped in this respect and possessing a knowledge of several European languages, and a fondness for linguistic studies which qualified him for the ready acquisition of native dialects, he has also the advantage of an enthusiastic devotion to his favorite studies, a readiness to endure any hardship in their pursuit,

and a capacity for adapting himself to any necessity." Thus reported the Executive Committee of the newly-founded Archæological Institute of America, in connection with Bandelier's appointment by that organization to conduct special researches in New Mexico, to which field of labor he repaired in 1880.

Bandelier's first attention was devoted to the ruins of the great historical pueblo of Pecos, the results of which were presented in a report on "A Visit to the Aboriginal Ruins in the Valley of the Rio Pecos," preceded by "An Historical Introduction to Studies Among the Sedentary Indians of New Mexico" (1881, reprinted 1883), being a discussion of the original sources of the Spanish history of the Southwest, with an analysis of the various itineraries of the first explorers and missionaries of that great region.

A. F. A. BANDELIER
(Photo. by Charles F. Lummis)

From Pecos Bandelier extended his researches to the Queres pueblo of Cochiti, where he remained two months on terms of entire familiarity and inspiring such confidence that he was adopted as a member of the tribe. "My relations with the Indians of this pueblo," he wrote, "are very friendly. Sharing their food, their hardships, and their pleasures, simple as they are, a mutual attachment has formed itself, which grows into sincere affection. They begin to treat me as one of their own, and to exhibit toward me that spirit of fraternity which prevails among them in their communism. Of course they have squabbles among themselves, which often reveal to me some new features of their organization; but on the whole they are the best people the sun shines upon." This visit to

Cochiti was the beginning of several which brought to the observer a keen insight into the life and customs of these villagers, and, with similar observations at the Tewa pueblo of San Juan, finally resulted in "The Delight Makers," a novel of early Pueblo life which, shrouded under a title that affords little clue to the instructiveness and charm of its contents, has never met the appreciation it deserves. It was Bandelier's belief that to present the results of scientific study in such manner that they can be "understanded of the people," technical treatment must be avoided even if it should be necessary to guise the subject-matter in the form of a novel.

The opportunity being afforded the Archæological Institute of sending a representative to join in the researches of the Lorillard expedition to Mexico and Central America under Désiré Charnay, Bandelier temporarily suspended his New Mexico investigations, and in February, 1881, proceeded to Mexico, only to find that Charnay had ceased operations and was about to return to France. Bandelier thereupon proceeded to Cholula, where he spent four months in studying its famous pyramid, the customs and beliefs of the native inhabitants, and especially those respecting the deity Quetzalcoatl, for whose worship Cholula was particularly celebrated. In June he visited Mitla, and later Tlacolula and Monte Alban, and after preparing a report on his Mexican observations, which was published in 1884 by the Archæological Institute under the title "An Archæological Tour in Mexico in 1881," returned to the United States in March, to resume his observations on the Pueblos and their remains, a report on which, bearing the title "Investigations in New Mexico in the Spring and Summer of 1882," was issued by the Institute in 1883. Bandelier continued his studies along the same general lines from 1883 to the winter of 1886, meanwhile (in 1885) making Santa Fe his home in order to be in more immediate touch with the field of his observations. During these years he penetrated almost every corner of New Mexico, Arizona, Sonora, and Chihuahua, and explored the country even farther southward in Mexico, visiting and describing hundreds of ruins and surveying and platting many of them. His travels throughout this vast area were almost exclusively afoot and frequently were fraught with danger. More than once he was beset by hostile Indians, including a band of Apache while on a raid, and on one of these occasions his life was spared only because he simulated insanity. During one of his journeys he was afflicted with smallpox, and again, in 1882, had a narrow escape from death in a midwinter blizzard in the desert of eastern New Mexico, where his two companions perished, but his own hardihood

enabled him to brave the storm and to reach safety after journeying 93 miles on horseback and 35 miles afoot through deep snow. So persistent was Bandelier in carrying out his plans of exploration and study, no matter what the personal risk, that several times he was reported to have been killed. He traveled armed only with a stick a meter long and graduated for measuring ruins, and relied on the meager hospitality of a pitifully unsettled and arid country for the means to keep body and soul together. To one who knows not the difficulties of travel in the field of Bandelier's researches thirty-five years ago, can the trials experienced by this earnest and enthusiastic student during the years of his labors be comprehended.

Limitation of space forbids at this time an extended review of Bandelier's investigations in our Southwest and in Mexico. But he who would may readily scan the published accounts of this remarkable man's scholarly efforts, for during his most active years he wrote prolifically of the results of his studies. No small part of his ambition was to upset the popular theories respecting the history, archeology, and ethnology of the great Southwest. To this end he destroyed the fanciful notions regarding the "Aztec" origin of various Pueblo ruins, the "perpetual fire" of Pecos, the "Montezuma" myth among the Pueblos, the age of the city of Santa Fe, the mystery of Quivira and of the "Gran Quivira," the location of the Seven Cities of Cibola, the routes of various early Spanish explorers, and many other fallacious traditions, and was the first to offer scientific evidence, based on his broad scholarship and remarkable ability in the utilization of source material, to settle once for all the varied problems concerning the condition and range of the Pueblo and other tribes before and after the beginning of the Spanish period. As to the enduring value of Bandelier's work, the present writer, who has dabbled in a limited area of the same field, can confidently say that no study pertaining to the history of the tribes of our Southwest and of northern Mexico can be conducted without utilizing the product of Bandelier's researches as a foundation. His sane and acute sense of discrimination in the interpretation of the *intent* of early Spanish explorers and missionaries, his unequaled familiarity with the country, the sources of material, and the Indians themselves, and his remarkable power of analysis, have been the means of placing in the hands of present and future students the materials for more intensive work without which their tasks would be arduous indeed.

From time to time Bandelier prepared various accounts of the progress of his investigations in the Southwest, which were incorporated chiefly in the annual reports of the Archæological Institute, although

several valuable papers appeared in various periodicals, while some of his knowledge was embodied in brief articles contributed to the "Century Cyclopedia of Names" and, more recently, to "The Catholic Encyclopedia." What may be regarded as his magnum opus, however, is the "Final Report of Investigations among the Indians of the Southwestern United States, Carried on Mainly in the Years from 1880 to 1885," Part I of which was issued by the Archæological Institute in 1890, and Part II in 1892. Of equal importance, from the historical point of view, is his "Contributions to the History of the Southwestern Portion of the United States," published also by the Archæological Institute in 1890, partly at the expense of Mrs Mary Hemenway.

Although the two investigators had been working along related lines in the same field for about three years, Bandelier and Cushing did not meet until 1883, but from the moment of their contact at the pueblo of Zuñi, where Cushing, in the prosecution of his studies, was then leading the life of an Indian, a warm friendship sprang up which ceased only with Cushing's death in 1900. In Bandelier's judgment the only way in which ethnological researches can be conducted successfully is by long and intimate life among the people to be studied, in the manner then being pursued by Cushing. In Bandelier's estimation Cushing was the only American ethnologist who ever "saw beneath the surface" of the Indians, who was able to think as the Indian thought. In the words of Bandelier, written in 1888, "the value of Mr Cushing's results does not lie so much in establishing a direct connection between such and such tribes; it establishes a *method of research* unknown heretofore, —one which leads to connections as well as to discriminations hitherto unnoticed."

With mutual appreciation of their respective endeavors, there is little wonder that, when in 1886 the Hemenway Southwestern Archæological Expedition was organized under the patronage of the late Mrs Mary Hemenway of Boston and under the directorship of Cushing, Bandelier was selected as its historiographer. During the next three years he applied himself assiduously to a study of the Spanish archives relating to the Southwest, not only in Santa Fe, but in the City of Mexico and elsewhere. On the termination of the work of the Hemenway Expedition in July, 1889, Bandelier's collection of copies of documents, together with a few originals, comprising in all about 350 titles, was deposited in the Peabody Museum of Harvard University.[1] In 1887–88

[1] See the Bandelier Collection of Copies of Documents Relating to the History of New Mexico and Arizona, *Report of the U. S. Commission to the Columbian Exposiloin at Madrid, 1892–93*, pp. 304–326, Washington, 1895.

he prepared an elaborate manuscript of 1400 pages, illustrated with 400 water-color sketches, under the title "Histoire de la Colonisation et des Missions du Sonora, Chihuahua, Nouveau Méxique et Arizona, jusqu'á l'an 1700," at the instance of Archbishop Salpointe, who offered it to Pope Leo XIII on the occasion of the Pontiff's jubilee, and it now reposes in the Vatican.

In July, 1892, Bandelier went to Peru to engage in archeological and historical research under the patronage of the late Henry Villard of New York; these were prosecuted under Mr Villard's patronage until April, 1894, when the important collections which had been gathered were given to the American Museum of Natural History, and the investigations were continued for that institution, Bandelier's field of operations being now shifted to Bolivia. Meanwhile, soon after their arrival in Peru, Mrs Bandelier died, and in December, 1893, at Lima, our explorer married Fanny Ritter, an estimable and charming woman, who, by reason of her linguistic training, her appreciation of the problems to the elucidation of which her husband was devoting the remainder of his life, and the breadth of her intellect, was a helpmate in every sense to the day of his death. In Bolivia Bandelier and his wife visited the ruins of Tiahuanacu, where many valuable collections were obtained and the structural details of the ruins studied, mapped, and platted. Returning to La Paz the couple explored the slopes of Illimani, where, at an altitude of 13,000 feet, other valuable collections were gathered from the ruins and burial cists. In December of the same year Mr and Mrs Bandelier visited the island of Titicaca, where three and a half months were spent in archeological and ethnological investigations; subsequently similar important work was conducted on the island of Koati.

Bandelier returned to the United States from South America in 1903, when he became officially connected with the American Museum of Natural History and undertook the task of recording his South American work for publication. He was also given a lectureship in Spanish American Literature in its connection with ethnology and archeology, in Columbia University in 1904. In 1906 he resigned from the American Museum and accepted an appointment with the Hispanic Society of America, under the auspices of which he prepared and published several contributions to South American history and archeology. During a period of about three years, from 1909 to 1911, Bandelier suffered practically total blindness from cataract, but he continued his work, with the aid of his wife, who now became eyes and hands to him. During this period of darkness the most important of his writings on South American

history and archeology, "The Islands of Titicaca and Koati" (New York, 1910), was published by the Hispanic Society. This book, writes Professor Hiram Bingham, a fellow-student of South American archeology, "is typical of his life-long crusade against tradition and for the truth. In it he shows the falsity of many historical myths for which the Spanish chroniclers and their followers were responsible. Prescott had to rely almost entirely on such sources as Garcilasso de la Vega. Yet that noble Inca left Peru when but a youth, lived forty years in Spain before he began to write, and then with pardonable pride sought to surround the empire of his ancestors with a glamour that should command the respectful admiration of sixteenth-century Europe. Bandelier, by his long years of actual residence among the Indians, was able to remove much of the accumulated crust with which romance and imagination had surrounded the truth. It was due to this ability that his comments on the literature of early Spanish-America were so valuable. His loss will be felt by students of American anthropology for many years to come."[1]

In October, 1911, Bandelier was appointed research associate in the Carnegie Institution of Washington for the purpose of enabling him to complete his studies of the Spanish documentary history of the Pueblo Indians, under a grant to extend for a period of three years. Proceeding to the City of Mexico, he was there engaged for several months, aided by his wife, in transcribing early documents pertaining to the subject of his investigation. He returned to the United States in 1913, and in the autumn of that year sailed for Spain for the purpose of continuing his researches in the archives of Madrid, Seville, and Simancas. In these investigations he was engaged at the time of his death.

In personality Bandelier was as simple as a child; he detested sham and charlatanry, was immovable in his friendship, and was an implacable enemy; he was the soul of generosity and hospitality, and was often saved from his troubles (which at times, owing to an extremely sensitive nature, he was wont to exaggerate) through a remarkably effulgent humor. Modesty was one of his strongest characteristics; he abhored notoriety, and rarely spoke of his personal achievements or of the dangers to which he had often been exposed during his work, except to a few intimates. He cordially disliked titles, and especially that of "Professor"; when thus addressed he is known to have said, "I *profess* nothing —if you would attach a handle to my name, let it be 'Mister'." And he equally detested to hear his name pronounced in any but the French way.

[1] *The Nation*, March 26, 1914, p. 328.

The value of Bandelier's scientific work has already been inadequately appraised in this all too brief sketch of the life and activities of the eminent scholar. There can be no question that the product of his untiring mind during a period of nearly forty years will stand the test of time, although Bandelier himself, with his usual modesty, once expressed the fear that the results of his Southwestern labors, at least, might not eventually prove to be worthy of his efforts. Those who knew Bandelier and the importance of his researches will agree fully with the expression of a companion in the South American field and a long-time friend:

"Fully conscious of the results of his absolute thoroughness of work, he was averse to notoriety; he cared only for the verdict of the Scientific world—and even for that, not enough to pursue it. He was a man essentially modest. Had he not been, he would have been blazoned throughout the world, as far less eminent scholars have been. As it is, his monument is his work, and the love and reverence of those who knew him and his achievements. . . . His extraordinary intuition was balanced by a judicial quality no less rare, which characterizes not only his own writings but his own estimate of his own work. His tireless and conclusive investigations upset many theories, and made him a target of much controversy, of which much was not of the same temperate and equitable quality. His work throughout is distinguished no less by its deep and definitive learning, than by the moderation, gentleness, and justice with which he disposed of theories and statements advanced with less honest revision."[1]

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[1] Charles F. Lummis in *El Palacio*, Santa Fe, N. Mex., April-May, 1914.

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"THE RED-PAINT PEOPLE"—A REPLY

In the *American Anthropologist* of October–December, 1913 (p. 707), Mr D. I. Bushnell, Jr, does me the honor to discuss at length my paper describing the Red-paint People of Maine. It is fortunate that Mr Bushnell wrote such a review, for it illustrates how easily one is misled when he has neither investigated the facts nor visited the scenes of explorations which he presumes to criticize. On reading Mr Bushnell's opinions to the effect that the ancient culture I have been studying in Maine is identical with that of modern Indians and is not to be differentiated from other Algonquian cultures, I made an investigation. I thought I might be in error and that Mr Bushnell had discovered sites or cemeteries in New England bearing out his contentions, but that his results had not been published. I immediately addressed the authorities on the subject

in the Smithsonian Institution and at Harvard University. These gentlemen informed me that so far as they were aware, Mr Bushnell has done no work in Maine. He may have been on the coast, or possibly he has visited Bar Harbor, but I cannot ascertain that he has carried on researches in the state. This being true, his wrong interpretation of our field labors should not pass unrebuked.

Neither Mr Bushnell nor any other real archeologist could have examined and opened 197 of the so-called graves or deposits (as we have done), nor could he have studied the character of the objects removed from the graves, compared them with objects (or interments) of Narragansett, Penobscot, and similar tribes, and after months of such study conclude that the graves I have described are part and parcel of a modern Indian culture. No unprejudiced worker,—a man who makes observations on field data and does not attempt to reconcile facts with a preconceived theory,—having done our work, would claim that all the New England cultures are one and the same and that they indicate no antiquity.

Next winter we hope to publish the results of our field observations during the last three years. When this report is issued all students of American archeology will agree, if they are amenable to deductions based on facts, that the so-called Red-paint culture is all I have claimed for it, and that Mr Willoughby's conclusions, presented in his able paper many years ago, are entirely true. Further, that the culture is even more pronounced and different from others than Mr Willoughby claimed it to be.

Mr Bushnell states that graves containing ochre abound. Of course they do—hundreds of them, in which there is a little ochre, are found in the United States, and there are records of several in which considerable red paint has been discovered. But in all these graves, whether found in Missouri, Florida, Ohio, South Dakota, or Massachusetts, the Red-paint culture types *do not persist*. That is the very point.

In the last number of the *American Anthropologist* Mr Clarence B. Moore also writes of hematite powder deposits in mounds. But in his extended quotations he mentions pottery as being among the objects discovered in association. Mr Moore's collections, illustrated in his magnificent books, show types common to the Florida and Alabama graves, but these are absolutely distinct and different from the stone tools Mr Willoughby and I have taken out of the ground. We get no pottery in the Red-paint groups.

If there were no difference as to types, layers, etc., between our Red-

paint deposits and the several mounds opened by Mr Moore or Mr Douglass, and Mr Bushnell's historic graves, I would scarcely be so foolish as to oppose evident truths and subject myself to adverse criticism. It is becaus these deposits are different from Mr Bushnell's graves and Mr Moore's mounds that I have drawn my conclusions.

I have found mounds containing colored earths, but I never discovered gouges, plummets, fire-stones, adze-blades, flat celts, and long "Penobscot-type" pendants in them.

I contended that the types described do not persist elsewhere, and this statement is in accord with the facts. Mr Bushnell's views are contrary to the facts.

The adze-blade, the gouge, the flat hatchet, the long slate points, the plummets, the fire-stones, and the hammer-stones—these are fixed types in the Red-paint culture area. The graves contain a preponderance of red paint. This is not true of the recent Indian cemeteries elsewhere in New England. To claim, as does Mr Bushnell, that because red paint is found in other portions of the country, these graves are not distinct from other cultures, is as logical as to contend that because prehistoric pottery is found in Florida, New Mexico, and Pennsylvania, pottery represents one and the same aboriginal culture regardless of locality.

Mr Moore does not group his Florida culture with that of Ohio and Wiscons n, although pottery is found in all three localities.

Mr Bushnell seems unable to realize that all Indian burials are not alike; that our observations were made with the greatest care and thoroughness, and that if these cemeteries, or deposits, and what is in them were but a duplication of other sites, we would have stated that fact.

Mr Bushnell's statement that I consider these graves very ancient merely because they are different from others, is incorrect. The graves are so old that one-fifth of the stone objects have commenced to disintegrate. In many places we cannot trace the outlines of the graves, although we made use of hand trowels and whisk brooms, and worked with extreme care.

Recently a large Algonquian cemetery was opened near Warren, Rhode Island. The interments indicate the early historic period, and are probably two hundred years old, if not more. In these graves fragments of cloth were found fairly well preserved, and on one or two of the skulls portions of the long hair remained. I would suggest that Mr Bushnell compare these finds with ours.

I worked along the Merrimac river this summer and found a number

of interments, but these do not compare generally or in detail with those of the Red-paint culture. These cemeteries are exactly like those Mr Bushnell imagines we discovered in the Red-paint area. In reality they are vastly different and should under no circumstances be grouped with them.

The sand ridges, in which most of the Red-paint people placed the deposits, are not wet, as Mr Bushnell imagines, but dry. The sole exception is the Mason site at Lake Alamoosook, and this is due to a dam constructed in recent times at the outlet of the lake. In my statement that the Maine graves are old, I subscribe to the belief expressed to me in conversation by such distinguished workers as Professor Putnam and Mr Willoughby. In archeology, when a man has labored for thirty years, he certainly should be permitted to express conviction that deposits in which stone implements decay are older than interments made just prior to the visit of John Smith or of Captain Mason.

If these graves are modern; if the Red-paint culture is the same as all other cultures in New England; if nothing is to be learned from such work as is being done in Maine—the hardest kind of work, involving hundreds of miles of travel, inconvenience, and the expenditure of large sums of money—then are we wasting our time, efforts, and means. At this writing, we have just come 233 miles through the Maine woods searching for sites on the St John river and its tributaries. We have dug in scores of places, but as yet have found no sites such as occur in the Red-paint area.

If the Indian is of the same culture and epoch throughout New England, as Mr Bushnell's article seems to imply, then all of us should abandon field work and confine our studies to historical documents. We will thus be saved useless expense and unprofitable labor. Having exhausted the historical data, we might study the life and record the opinions of the modern Penobscots living in Oldtown, Maine, and who now serve as farmers, carpenters, lumbermen, and guides. If Mr Bushnell is right, there would be no archeology. We should study the living and permit the dead to rest in their graves.

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TWO ALLEGED ALGONQUIAN LANGUAGES OF CALIFORNIA

THE last number of volume 15 of the *American Anthropologist* contains an article by Dr Sapir attempting to show that Wiyot and Yurok, two native languages of California, belong to the Algonquian stock.

As both these languages hitherto have been considered as independent families, or at the best remotely connected with each other, the importance of this discovery, if valid, can hardly be overestimated. Considering the inherent improbability of such a relationship, for geographic if for no other reasons, since the article comes from the pen of so careful and able a scholar, it is important that the thesis should be confirmed or refuted as soon as possible. My colleagues, Doctors Swanton and Frachtenberg, and Mr J. N. B. Hewitt, have respectively furnished me the data on Coahuilteco, Tunica, Chitimacha; Coos, Molala, Kalapuya; and Iroquois.

In spite of the goodly array of lexicographical material which Dr Sapir has assembled, I am quite unconvinced that either Wiyot or Yurok belongs to the Algonquian stock. My reasons briefly are: (1) that the published Wiyot and Yurok material indicates that both have many morphological traits which are thoroughly un-Algonquian; (2) that many of the supposed resemblances between Wiyot and Yurok morphological elements to Algonquian are purely fanciful as different elements are compared; (3) that many of the supposed similarities in morphological elements must be considered as accidental, for they occur likewise in a number of other languages; (4) that Wiyot and Yurok possess some morphological elements which strongly resemble those of several non-Algonquian languages; (5) that fancied lexicographical similarities have little or no weight in view of the above points.

The following are some of the most pronounced un-Algonquian morphological features of Wiyot:

1. In the combination of a noun and an adjective, the order is the noun with suffixed adjective.

2. Nouns are not classified as animate and inanimate, nor are singular and plural distinguished.

3. The verbal pronouns do not distinguish animate and inanimate third persons, nor are the exclusive and inclusive first persons plural distinguished.

4. The subject and objective verbal pronouns of the third person do not distinguish between singular and plural.

5. The verbal pronouns are the same in all modes, and they are in all cases suffixed, and modality is expressed by prefixes.

6. The verbal pronoun of the first person often is not indicated at all.

7. The verbal pronouns (save one case discussed below) do not bear the remotest resemblances to those of Algonquian.

8. The verbal subjective and objective pronouns in transitive verbs

are not so fused that analysis into the component elements often is nearly and sometimes utterly impossible.

9. The stem-vowel of a verb is not changed to form a participial.

10. In demonstrative and interrogative pronouns, neither animate and inanimate nor singular and plural are distinguished.

11. A demonstrative element *ru-* is frequently prefixed to verbs.

12. The possessive pronoun of the third person does not distinguish singular and plural.

13. In pronouns of the third person we have no such device as in Algonquian to distinguish identity and difference in several third persons in a sentence.

14. Instrumental particles showing by what the action is done, i. e., by the hand, by the foot, with the mouth, with something sharp,—instrumentality in general,—often simply to transitivize a verb, do not occur. The Wiyot suffix *-ut*, denoting that the action of a verb is performed with an instrument, is not comparable as a noun with which the action is performed is expressed outside the verbal complex.

15. A special particle is always attached to the first word of an interrogative sentence.

16. Reduplication is not common. Despite Dr Sapir's assertion, reduplication is common in Algonquian. The reason that it is not discussed at length in the *Handbook of American Indian Languages* is that at the time of its preparation definite rules governing this could not be formulated; at the same time the great number of ideas expressed by reduplication was clearly indicated.

17. Middle and passive voices appear to be wanting.

It is perfectly true that many of the above objections are negative, that is, that thus far the phenomena listed have not been reported. It is possible that further investigation may reveal some of them, but it is not likely that a skilled investigator like Dr Kroeber would have overlooked the majority of them. Now it is perfectly conceivable that a divergent Algonquian language might possess a few of the un-Algonquian traits mentioned above, but it is incredible that any Algonquian language possesses all of them *en masse*. For this reason the apparently abundant lexicographical material does not impress me, for how can one be sure that the corresponding morphological elements are being compared, in view of the un-Algonquian morphology of Wiyot; and in point of fact, demonstrably in certain cases at least, the wrong elements are compared. Either Wiyot is very different from the published description, or it is not an Algonquian language.

In the case of Yurok it is not possible to make as extensive a list of un-Algonquian features as in the case of Wiyot. But that is presumably because the actual material is more scanty, nor is it as good in quality. A list, such as it is, follows:

1. True substantives may be combined into a single noun. Though not absolutely absent from Algonquian, it is rare.

2. Nouns are not classified as animate and inanimate, nor are singular and plural distinguished.

3. The independent pronouns have objective case-forms.

4. The plural and singular of possessive pronouns are the same.

5. The first person exclusive and inclusive are not distinguished in the independent, possessive, or verbal pronouns.

6. Apparently in demonstrative and interrogative pronouns, neither animate and inanimate nor singular and plural are distinguished.

7. The verbal pronouns do not in the remotest way resemble Algonquian ones (for alleged resemblances, see below).

8. In the verb, modality is expressed by prefixes, not by different pronouns.

The comments made under the Wiyot list apply with equal force here.

Now let us examine some of the alleged morphological evidence advanced by Dr Sapir to show that Wiyot and Yurok are Algonquian languages.

In Wiyot the objective pronoun *-a* "him" is held to be identical with Fox *-ʌ-* in *ʌ-tci*, of the conjunctive mode, "thou—him." Now it is impossible to separate Fox *-ʌtci* from Fox *-tci* "he," intransitive, of the same mode, and *-itci* "he—me," of the same mode, in which *-i-* is the objective pronoun first person singular. (See *American Anthropologist*, N.S., 15, p. 694.) Obviously the *ʌ* of *-ʌtci* does not mean "him," but the *tci* does. In fine, the wrong morphological elements are being compared.[1] Now from what has been said about Fox *-ʌtci*, it is impossible to regard the *ʌ* of Fox *-ʌgi* "I—him," of the conjunctive mode, as being the objective pronoun of the third person animate singular. Moreover, it should be recalled that Fox *-ʌgi* also means "he—it." For both these reasons we cannot consider the *-gi* of *-ʌgi* "I—him" as the subjective pronoun of the first person singular. Therefore the comparison with Yurok *-k* "I" fails as the wrong morphological elements are being compared. In the same way Wiyot *-it*, *-at* "thou" can not be compared

[1] If Wiyot *-a* "him" bears a resemblance to anything Algonquian it is Fox *-ā-* in *-āʌtci*, *-āsa*, *-āgwāni* "he—him, them an." of the conjunctive, potential subjunctive, and interrogative conjunctive modes respectively.

with *-tci* in Fox *-ʌtci* "thou—him," as we are dealing with different morphological elements.

Yurok *-m* "thou" is compared to Ojibwa *-m* "you" (pl.) of the independent mode. The full Ojibwa form is *ki—m*, which corresponds exactly to Peoria *ki—mwa;* and Dr Sapir has noted that *mwa* is preserved in the Ojibwa imperfect *-mwa-ban*. It is intimated that the *m* denotes the second person singular "thou," and the *wa* a second person plural suffix. I regret that a proper discussion of this point involves a discussion of the principles of the formation of the independent mode in Algonquian generally. It is universally agreed that the pronouns of the independent mode are to be associated with the possessive pronouns. It is also known that in Algonquian an *m* suffix is often used in connection with the suffixed portions of the possessive pronouns. Now, as I have heretofore intimated (*American Anthropologist*, N.S., 15, p. 694), certain supposed active forms turn out to be passives in formation.[1] Thus Fox *ne—gwa* "he—me" stands for *ne—gu-a: -gu-* is the same as the *-gu-* passive sign; *ne—a* the same as the possessive pronoun of the first person singular, animate singular, without the *m* suffix. So an expression as Fox *newâpʌmegwa*, "he looked at me," really means "my being looked at." A further point I wish to make here is that in the independent mode, as in the possessive pronouns, the *m* suffix may be used. Thus in Menomini the intransitive first person plural exclusive and inclusive is *ki—mināwᵉ* and *ni—mināwᵉ* respectively; in the transitive verb "he—us," exclusive and inclusive is *ki—gunāwᵉ* and *ni—gunāwᵉ*. In these *mi* is the *m* suffix and *-gu-* the passive sign. Similarly Fox *ke—guwāwᵉ*, Menomini *ki—guwāwᵉ* "he—you (pl.)" are to be explained as without the *m* suffix which reappears in Menomini *ki—mwāwᵉ* "you (pl.)" intransitive, *ki—imwāwᵉ* "you—me" (*-i-* "me"; see *American Anthropologist*, l. c., p. 694). Just so in Ojibwa *ki—m* "you (pl.)," intransitive, *ki—im* "you (pl.) —me," but *ki—gowa* "he—you (pl.)," in which *go* is the passive sign and *ki—wa* the same as the possessive sign for the second person plural, animate and inanimate singular. It will be recalled that Ojibwa *ki—m* phonetically stands for *ki—mwa*. By the above I think I have made it clear that Dr Sapir's comparison of Yurok *-m* "thou" and Ojibwa *-m* in *ki—m* "you pl." intransitive of the independent mode, is not valid as different morphological elements are being compared. See also below.

As to the comparison of Ojibwa *-wa* in *ki—wa* "your" and Wiyot *kiluwa* "you," as long as this *wa* appears also in the Ojibwa possessive

[1] In a future paper I shall take this up systematically.

pronoun of the third person plural (and similarly in Fox), though not in Wiyot, it is in the highest degree probable that we are here again dealing with different morphological elements.

Wiyot *hu*, the third person possessive pronominal prefix is compared with Fox *u*-, etc. But in Wiyot this *hu*- also occurs in the first person plural, though the Yurok correspondent does not. Is it not doubtful if we are dealing with comparable morphological elements? Another reason for not considering the apparent correspondence convincing will be found below.

Dr Sapir thinks that, as some Yurok adjectives distinguish animate and inanimate, other evidence will show that such a distinction exists elsewhere in the language. If that were the case Dr Kroeber probably would have recorded it, as this feature is particularly easy to determine.

I do not deny a few Wiyot and Yurok morphological elements resemble Algonquian ones; for example, Wiyot *k*-, Yurok *qe*- "thy." But I do not think at present that we have any right to consider them as more than accidental. A number of such Wiyot and Yurok elements have resemblances in other languages. For example, the verbal pronoun of the first person singular in both Iroquois and Yurok is *k*, though in the former it is prefixed and suffixed in the latter. In Molala and Miwok it is *k*, and is suffixed; in Chitimacha it is *k*, *ki* under unknown conditions, but in both cases is suffixed. Molala *k·ī'ˢ*, the independent pronoun of the second person singular, resembles Wiyot *k*-, Yurok *qe*- "thy," to say nothing of Algonquian correspondents in independent, possessive, and verbal pronouns. The subjective verbal pronoun for the second person singular in Yurok is *-m;* certainly this closely resembles Tsimshian and Chinook *m*-, Maidu *mī*, Yuki *mi*, Wappo *mi*, Miwok *mi'*, Pomo *ma*, Kalapuya *ma*-, as well as the corresponding Kalapuya independent pronoun *ma'*. The Yurok independent pronoun of the first person singular *nek* is close to Chinook *naika* and Coos *nE'xkan*. Wiyot *hu*-, the possessive pronoun of the third person, might easily be compared with Miwok (S. Sierra) *hu*-, and Tlingit *hu*, the independent pronoun of the third person singular, and Tunica *hu*- "his." Again the Wiyot possessives *hu*- and *m*- casually resemble Hupa *xō*- and *m*-, though their respective usage is not the same. In Coahuilteco the possessive pronoun for the second person singular has two forms *xa*- and *m*-, the exact use of which is unknown; the former has a fanciful resemblance to Wiyot *k*-, Yurok *qe*-, and the latter to Yurok *-m*, the verbal subjective pronoun of the second person singular. In Wiyot the subjective verbal pronoun of the second person singular is *-as*, and in one Miwok dialect *-s;* in

Wiyot the subjective verbal pronoun of the first person plural is *-itak;* in Miwok *-tok*. It has long been recognized that *n* in the possessive, verbal (as subject), and independent pronouns of the first person singular is widely spread; examples are Chinook *n-* (verbal), Maidu *nī* (verbal), *niki* (possessive), Tsimshian *n-* (verbal), Coahuiteco *na-* (possessive), Yurok *ne-*, *no-*, Fox *ne-* (possessive and verbal), and similarly other Algonquian dialects. Languages as far apart as Wappo and Iroquois agree closely in the independent pronoun of the first person singular: in the former it is *ī*, in the latter it is *i*^{s}.

Enough has been said to show the utter folly of haphazard comparisons unless we have a thorough knowledge of the morphological structure of the languages concerned. It is for this reason that I have refrained from endeavoring to compile a list of fancied lexicographical resemblances between Wiyot and Yurok with other languages than Algonquian ones, and a list of such similarities between Algonquian and other languages than Wiyot and Yurok.

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INTERNATIONAL CONGRESS OF AMERICANISTS

THE undersigned members of the Permanent Council of the International Congress of Americanists, basing their action on paragraph XV of the statutes of the Congress as adopted at Paris in 1900, feel obliged to make the following declaration:

At the closing meeting of the XVIII Congress, held in London on June 1, 1912, the following regulations were adopted in regard to the locality at which was to be held the XIX Congress in 1914:

IV. (*a*) An invitation to hold the meeting of the XIXth Congress at Washington was moved by Dr A. Hrdlička in the name of the Smithsonian Institution, and seconded by Professor H. Cordier.

Letters of invitation from the Smithsonian Institution, the George Washington University, the Catholic University of America, the Archæological Institute of America, the Anthropological Society of Washington, and Georgetown University were read, and a list of members of the proposed Organizing Committee was presented.

Invitation accepted by acclamation. Mr W. H. Holmes, Dr A. Hrdlička, and Mr F. W. Hodge were named as organizers.

(*b*) An amendment: Mr A. Posnansky, as bearer of an invitation from the Government of Bolivia (and from the Geographical Society of La Paz) to hold the XIX Congress in La Paz, proposed the acceptance of this as an addition to the Session in Washington.

"Accepted unanimously."[1]

Following these lucid and incontrovertible decisions, the Session of the XIX International Congress of Americanists is to be held this year in Washington, and is to be followed by a supplementary session at La Paz, Bolivia. The latter session was from the first conceived as a kind of larger excursion to follow the post-session excursion in the United States, and at which papers and discussions might be presented.

On the 24th of June, however, an undated invitation from La Paz reached a number of European Americanists, signed by a president and a general secretary of an organizing committee in La Paz, neither of whom appears to have been elected at the London session, which document contradicts the agreement of the London Congress in that it announces the La Paz Session as the *Second* Session of the XIX International Congress of Americanists, similar to the Second Session which, for important reasons and under exceptional circumstances, was held in 1910 in the City of Mexico, following the session in Buenos Ayres. In the present case such an assumption is in direct opposition to the clear meaning of the decisions rendered at the London Congress.

The undersigned members of the Permanent Council of the Congress of Americanists definitely declare, therefore, that in this year *only one authorized session* of the XIX Congress can take place, and that in Washington; that this session has exclusive charge of carrying out the regulations of the Congress as given in its statutes; and that besides the discharge of these obligations it is to decide on the place of meeting of the XX Congress, which is to convene in 1916. The *supplementary* Session at La Paz is free to arrange for scientific presentations and discussions, as well as additional excursions, and to publish its Proceedings. That Session will also be in a position to adopt resolutions, but not statutory conclusions.

This declaration will be submitted to the XIX Session in Washington.

Berlin, London, Versailles, and Wien, June 1914. H. Froidevaux, G. Hellmann, F. Heger, Sir Clements Markham, E. Seler, K. von den Steinen, W. Weckbecker.[2]

[1] *International Congress of Americanists, Proceedings of the XVIII Session*, London, 1912, page lix.

[2] Several of the members of the Permanent Council could not be reached, owing to absence on expeditions or residence in distant countries.

ANTHROPOLOGIC MISCELLANEA

Peabody Museum activities.—The operations of Peabody Museum of Harvard University during last year were made noteworthy by the beginning of the construction of the addition to the museum building, the original structure having been commenced in 1859. The activities of the Museum, however, were important in a scientific way also. Dr H. J. Spinden's memoir on *Maya Art*, which was published during the year, embodies in its 285 pages, with numerous illustrations, the results of three years of research while the author was a graduate student. Dr A. M. Tozzer finished the preparation of his memoir on *Nakum* and was appointed to represent Harvard University as director of the International School of Archeology and Ethnology in Mexico for the season 1913–14. Dr R. E. Merwin prepared a part of his report on the exploration of a portion of Campeche and of that portion of Quintana Roo north of the Rio Hondo and including descriptions of several important ruins. Accompanied by Mr C. W. Bishop, Dr Merwin will conduct another expedition to Central America during the season 1913–14. Mr A. V. Kidder, associate curator of archeology, has continued his studies of the pottery of the Pueblo region. Mr C. C. Willoughby, assistant director, accompanied by Mr R. G. Fuller, made an examination in August, 1913, of the archeological remains in Tseonitsosi cañon and a portion of Chin Lee valley, northeastern Arizona, with a view of their future excavation. Mr Bruce W. Merwin was employed during the summer of 1913 in investigating a group of seven large mounds near Obion river in Henry county, Tennessee; three of these were excavated and found to be domiciliary and of three periods of occupancy. With the coöperation of the University of Nebraska, Mr F. H. Sterns, Hemenway fellow, gave special attention to the prehistoric habitation sites on the bluffs of the Missouri in Nebraska, three months being devoted to this work. A note by Mr Sterns on these interesting remains appeared in the last issue of this journal. Mr Ernest Volk continued his digging in the vicinity of Trenton, New Jersey, and a large amount of material was sent to the Museum, obtained principally from various deposits of gravel. "While some of these gravel specimens are probably artificially chipped," says Professor Putnam in his report, "the same problem is here as is now being so carefully studied in England and in Europe, as

to just what is man's work and what is nature's." Mr S. J. Guernsey, Hemenway assistant in archeology, in his studies of the archeology of the Charles River valley, has found a number of fire-holes at various points, and three Indian graves in Watertown, one of which was unusual in being walled or lined with stones. Mr Guernsey also explored two village sites on Martha's Vineyard, obtaining numerous collections therefrom. Dr Charles Peabody, curator of European archeology, made two trips to France, Italy, and England for the purpose of obtaining for the Museum additional specimens by personal exploration. The results of Dr Peabody's excavations at La Quina with Dr Henri Martin are described elsewhere in this journal. By the courtesy of Dr Sturge he was able to collect a number of paleolithic implements from the noted locality in Mildenhall, Suffolk, England. Dr Roland B. Dixon, curator of ethnology, was on sabbatical leave during the year, spending fourteen months in travel in Asia, during which time he was able to secure a considerable collection for the Museum. Dr Dixon journeyed twelve hundred miles through the northern Himalayas and along the borders of western Tibet, and after returning to India a visit was made to the Kasai and Nagas in Assam. He studied the various museum collections in India, and spent two months along the Chinese frontier in Upper Burma and the Shan States among the Kochin, Shan, and Palaung; the Museum collections in the Federated Malay States, Singapore, and Java were likewise studied and the most important archeological sites in the latter island visited. Mr Rudolph R. Schuller made an interesting discovery in the college library of two loose leaves which were recognized as a part of the long-lost work by Fr. Valdivia, published in 1607, in the little known language of the Millcayac Indians of South America. The importance of this work led to its publication by the Museum, with photographic reproductions of the four pages referred to.

University Museum Expedition.—A letter has been received from Dr Farabee giving the history of the South American Expedition of the University Museum of Philadelphia up until the time of writing, April 29. The letter was written at the Barbadoes and was the first one received for six months. During this period the party was in the unexplored forests of southern British Guiana and northern Brazil. The letter states that from December 16 to April 1 the party was among tribes of Indians which had never before seen white men and the information obtained was new to science. The tribes encountered are the following: Parikutu, Waime, Chikena, Katawian, Toneyan, Diow, Kumayenas, and Urukua-

nas. Besides these hitherto unknown tribes, the party passed through the territory of the Waiwais where collections were made and other valuable data obtained. The party, which consisted of Dr Farabee, Mr Ogilvie, and four Indians, reached the coast by descending the Corentyne river. They were suffering from fever at this time and reached Georgetown greatly reduced in strength. Dr Farabee went to the Barbadoes to recuperate and has since proceeded to Para to make preparations for his next journey into the interior. The University Museum has received the third consignment of ethnological specimens from the Amazon expedition, as well as 350 negatives and a large package of note books. Dr Franklin H. Church, physician to the Amazon Expedition, accompanied Dr Farabee until January 8. At this time Dr Farabee found it necessary to reduce the party owing to the increasing scarcity of food in the forest. He therefore despatched Dr Church with most of the Indians to return by way of Melville's ranch and Boa Vista to Manaos, and to carry with him the collections and notes made to that date. Dr Church arrived at Manaos on March 15, and from that point returned to the United States. He arrived at the University Museum with the photographs and notes on June 1.

American Museum Bequest.—Mrs Morris K. Jesup, who died on June 17, bequeathed $5,000,000 to the American Museum of Natural History and made other bequests to public institutions amounting to $3,450,000. In providing in her will for the American Museum of Natural History, Mrs Jesup said:

> I give and bequeath to the American Museum of Natural History of the city of New York four million dollars ($4,000,000) as a permanent fund to be known as 'The Morris K. Jesup Fund,' the income, and only the income, to be used in the purchase of specimens and collections and the expenses incident to and incurred in assisting scientific research and investigation and publication regarding the same, which the trustees of the museum shall regard as in its interests.

In a codicil, added to her will three years after the will was drawn, an additional $1,000,000 is given to the Museum. Morris K. Jesup, who died on January 22, 1908, became president of the Museum in 1882, and devoted a large part of his time and energy to its interests. In his lifetime Mr Jesup gave more than $1,000,000 to the Museum, and under his will it inherited an additional $1,000,000.

Porto Rico Research.—The New York Academy of Sciences has begun a scientific study of the island of Porto Rico along the lines of geology, paleontology, zoology, botany, anthropology, and oceanography.

The Academy has voted $1,500 a year for five years on this work, and coöperation with the Academy has been assured by the American Museum of Natural History and other scientific institutions. The anthropological research of the Academy is represented on the committee by Dr Franz Boas. In a recent number of *Science*, Dr Edmund Otis Hovey thus writes of the needs of anthropological work in Porto Rico, and it may be assumed that the research in this field of science will follow the suggestions there outlined: "The anthropology of Porto Rico offers an attractive field of study not only in the ethnology of the present inhabitants, but also and more particularly along the lines of archeology. Much material has been gathered from the surface, but a broad field is offered in the investigation of anciently inhabited caves and in the scientific working over of numerous kitchen middens."

Rev. A. G. Morice, O.M.I., M.A., the well-known historian and anthropologist, who has just been giving for the fourth year a course of anthropology at the University of Saskatchewan, has been unanimously elected the first Honorary Member of the Royal Canadian Institute, "in recognition of his eminent services to science by his researches into the ethnology and philology of the Western Dénés and other Indian nations of British Columbia embodied in numerous contributions which have enriched the Proceedings and Transactions of this Institute, and also by his studies for archeology and history shown by articles which have appeared in various scientific periodicals and by his *History of the Northern Section of British Columbia*," etc., as is stated in the official request for the title spontaneously made in his behalf to the council of the Institute. Father Morice had already been made the first Bachelor of Arts and the first Master of Arts of the University of Saskatchewan.

Mr Sylvanus G. Morley, formerly Central American Fellow of The School of American Archæology of the Archæological Institute of America, has accepted a position as research associate with the Carnegie Institution of Washington. Mr Morley has just returned from a five months' field season in Central America, where, with Dr H. J. Spinden, of the American Museum of Natural History, he visited the sites of Naranjo, Tikal, Seibal, Aguas Calientes, Ixkun, Ucanal, Yaxha, Chunvis, Altar de Sacrificios, Piedras Negras, and Quirigua, in Guatemala; of Yaxchilan and El Pabellon in Mexico; of Santa Rita Corozal in British Honduras, and of Paraiso in Honduras. Many new hieroglyphic texts were brought to light.

Alcée Fortier, professor of Romance languages in Tulane University, New Orleans, and author of numerous works on history and folk-lore, died on February 14. Professor Fortier was president of the Modern Language Association in 1898, of the American Folk-lore Society in 1894, and of the Athénée Louisianais since 1892; he was also an officer d'Académie, a chevalier de la Légion d'Honneur, and a member of various other literary and learned organizations. He published *Bits of Louisiana Folk-lore* (1888), which was expanded into *Louisiana Folk-tales*, published in 1895 as volume II of the Memoirs of the American Folk-Lore Society. He was also the author of a *History of Louisiana* (1904) and a *History of Mexico* (1907).

AN expedition under the leadership of Miss Mary A. Czaplicka, of Somerville College, Oxford, left Moscow in May for the Yenisei river in order to study the physical and social anthropology of the Tungus and Ostiak. Miss Czaplicka has been commissioned by the University of Oxford and the Academies of Moscow and of St Petersburg, and the other members of the party represent different institutions. Mr Henry A. Hall, of University Museum, Philadelphia, will undertake the anthropometric work. It should be noted that the Ostiak of the Yenisei are distinct from the Yenisei of the Ob, who have already been studied by members of the Jesup North Pacific Expedition.

WE regret to note the death of Jean Chaffanjon on September 7, 1913, at Tjitlim, district of Riouw, in the island of Bintang, Dutch Indies, aged 59 years. Chaffanjon was noted particularly for his studies of the archeology and ethnology of the Orinoco region of South America between the years 1884 and 1890, but he also traveled and made important anthropological collections in central and northern Asia.

SIR ARTHUR EVANS has presented to the museum of the University of Cambridge the last instalment of a set of archeological objects selected from the collections of his father, the late Sir John Evans. The gift consists of 121 specimens ranging in date from prehistoric times to the eighteenth century. All the specimens were found in Cambridgeshire and the adjacent counties.

MR M. R. HARRINGTON, assistant curator of the American section of the University Museum of Philadelphia, has started on a trip to Oklahoma where he will spend the summer making studies and collections among the Ponca and Delaware Indians.

THE disastrous fire at Salem, Mass., spared the Peabody Museum and the Essex Institute. The house of Dr E. S. Morse, with its valuable papers, drawings, books, and collections, also fortunately escaped.

PROFESSOR MARSHALL H. SAVILLE has departed for South America for the purpose of making archeological researches in Ecuador and Colombia in the interest of the Heye Museum of New York City.

MISS ELLEN CHURCHILL SEMPLE, of Louisville, Ky., author of works on anthropogeography, has received the Cullom Medal of the American Geographical Society.

WE regret to record the death of Professor Doctor Paul Ehrenreich, privat-docent in the Royal University of Berlin, on April 14th, in his fifty-ninth year.

REV. STEPHEN D. PEET died at Northampton, Mass., on May 24. He was founder, editor, and manager of the *American Antiquarian* from 1878 to 1910.

THE archeologist, M. Georges Perrot, permanent secretary of the Academy of Inscriptions and Belles Lettres of Paris, died on June 30.

THE Drapers' Company of London has made a grant of £200 a year for three years for anthropology at the University of Cambridge.

MR C. W. BISHOP has been appointed assistant curator of the section of general ethnology of the University Museum of Philadelphia.

DR J. G. FRAZER, author of *The Golden Bough*, was knighted on the occasion of King George's birthday, June 22.

As this belated issue of the AMERICAN ANTHROPOLOGIST *is passing through the press, the Organizing Committee of the XIX International Congress of Americanists which was to assemble in Washington, October 5–10, after asking an expression of opinion of all available members has decided to postpone the session until such time as conditions in Europe may justify.*